







## UNITED SOCIETY OF CHEMISTS AND DRUGGISTS.

## FOURTH ANNUAL FESTIVAL AND GENERAL MEETING.

We have much pleasure in giving publicity to the following letter, which has been addressed to us by the secretary of the United Society :

"20, New Ormond Street, W.C.

"November 9th, 1865.

"Sir,—I am desired to inform you, for the information of the trade generally, that the following arrangements have been made for the Fourth Annual Festival of the United Society :—

"On Wednesday, November 22nd, the DINNER, in aid of the Benevolent Fund, will be held at the London Coffee House, Ludgate Hill. THOMAS HUGHES, Esq., M.P., will take the Chair, at 6.30 p.m., precisely. Tickets for the Dinner, inclusive of dessert, may be had on application to this office. Gentlemen's tickets, 7s. 6d.; Ladies' tickets, 5s. 6d.

"The ANNUAL MEETING of the Society will be held at this office, on Thursday, the 23rd instant (the morning after the Dinner), at 10 a.m., when representatives from all parts of the country will be present. Business of great interest, and of vital importance to the trade will be transacted, and it is hoped that the members of the Society, resident in London and the neighbourhood, will attend and take a part in the proceedings.

"I am, Sir, your obedient Servant,

"CYRUS BUOTT, Secretary."

BRADFORD.

On Wednesday evening, the 8th instant, a meeting of the United Society, in Bradford, took place at the Talbot Hotel, Mr. W. NEWSHOLME, in the Chair.

Mr. COOKSON moved the following resolution :—

"That as the Pharmaceutical Council have hitherto opposed the restriction of the sale of dangerous drugs and poisons to examined persons, as provided by the Bill of the United Society of Chemists and Druggists, their claim to examine all future candidates for the trade is utterly inconsistent with their opposition to that bill, and would not only be unjust to its promoters, but contrary to the recommendation of the Select Committee of the House of Commons; and further, that it is an insult to the entire body of non-pharmaceutical chemists to suppose them either incapable of managing their own affairs, or unworthy to take an interest in the well-being of the trade to which they belong. The chemists and druggists of Bradford, therefore recommend that the United Society take its stand on the principles of Bill No 2 only, as recommended by the Select Committee of the House of Commons."

Mr. STEAD seconded the resolution, which was unanimously adopted.

The following motion was approved of :—

"That the principle of compulsory examination of all future chemists, with equal privileges, and the right of self-government for the trade, should be urged upon the new Parliament."

After a short conversation, it was unanimously agreed that a delegate from the Bradford Branch should attend the Annual Festival of the Society, which takes place in London on the 22nd and 23rd instant.

LIVERPOOL.

The members of the Liverpool Association of the United Society of Chemists and Druggists met together at the Stork Hotel, Queen's-square, on the 11th ult., when the following resolution was unanimously adopted :—

"That the Liverpool Association of the United Society adopt the first Seven Clauses of the Chemists and Druggists' Bill, No. 2, as the basis of the future policy of the Society, and will support the Executive Committee in whatever measures may be necessary to secure its success."

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The dinner to commemorate the third anniversary of the Association was admirably provided by Mr. Ballard, the proprietor. The company sat down at half-past 7 p.m., John Edisbury, Esq., presiding, and Mr. Rowe, of London, occupying the vice-chair. When the cloth was drawn,

The CHAIRMAN proposed the usual loyal and popular toasts, introducing each with some appropriate remark; and then, having congratulated the chemists and druggists present upon the success which the Executive Committee, aided by their Secretary, Mr. Buott, had achieved in Parliament, he gave the toast of the evening—"Prosperity to the Liverpool Association of the United Society of Chemists and Druggists," and called upon Mr. J. F. Smith, the Hon. Secretary for Liverpool, to respond.

Mr. SMITH gave a very satisfactory account of the Association, which now numbered over one hundred members. A feeling of loyalty to the cause of the Society, and good fellowship amongst one another, distinguished the Chemists and Druggists of that Association, who were determined to support the Society's Bill, especially on the point of a thoroughly popular and independent government. Mr. Smith then proposed the health of the General Secretary of the Society, Mr. Buott, who was their specially invited guest on that occasion.

Mr. BUOTT, in returning thanks, referred to the contrast between the social and political condition of the chemists and druggists of Liverpool three years ago, and that which existed now. When he first came to Liverpool as the Society's agent, the general feeling in the trade was that of repulsion to one another; but now they met in social harmony, and there was scarcely a respectable non-pharmaceutical chemist to be found in Liverpool or its neighbourhood who was not a member of the United Society. Only three years back the Medical Council might have succeeded in getting a Bill to tax and govern the chemists and druggists, for in Liverpool no half dozen of them could have been found to assist in offering combined and successful resistance; but now the case was different. The Liverpool Association had rendered both moral and pecuniary support to the United Society, whose power had commanded the attention and respect both of Government and Parliament. Mr. Buott ridiculed the absurdity, and strongly condemned the presumption, of the Pharmaceutical Council, in claiming exclusive right to the examination of all future chemists and druggists. He urged the chemists present not to relax in their efforts until the incorporation of the trade was accomplished; and then proposed the health of the Chairman and Secretary of the Liverpool Association, whose services in the cause he warmly eulogized; and sat down amidst reiterated rounds of applause.

The Chairman and Secretary having returned thanks, the company closed a very pleasant evening, and separated.

SHEFFIELD.

The second anniversary of the Sheffield branch of the United Society was celebrated on the 11th ult. by a dinner at the King's Head Hotel. The chair was occupied by Mr. Hornby (in the unavoidable absence of Dr. Allan through indisposition), and Mr. Hudson took the vice chair. The usual loyal toasts having been duly honoured,

The VICE-CHAIRMAN proposed "Success to the Sheffield Association of Chemists and Druggists." He regretted that the United Society had not been able to pass its Bill in Parliament last session, but he sincerely hoped that before twelve months had passed its members would be able to place themselves in the same position as the members of the Pharmaceutical Society.

Dr. J. C. HALL, in responding, said that it might appear somewhat strange that a practising physician should be called upon to respond to the toast, but it had been a matter of pride and satisfaction to him to know that he had been the first president of the association. He ventured to say further that if a practising physician was not a chemist, and a good chemist, he was but little qualified to practise in that profession to which he had the honour to belong. As a practising physician, he knew how much he was indebted to the chemists and druggists of the town in which he lived, for physicians could not fight disease without weapons; and, however cleverly they might diagnose cases, however ably they might prescribe for them, unless the chemists and drug-



gists carefully prepared their prescriptions, it was utterly impossible for them to succeed. In becoming president of the society he did not accept the office in any opposition to the Pharmaceutical Society of this country. All honour to the society, for it had done much to advance the interests of the trade in the kingdom. But if that society had admitted no one as a member excepting by examination, he could perfectly understand why they should assume all the feathers of the peacock. But he saw in that room gentlemen who once belonged to that society, and because they failed upon some occasion to pay their two guineas, they were no longer permitted to belong to the society; the society said, "You are not so good as us; you must serve upon juries; you cannot have the same privileges as belong to us." He hoped he was too good a Radical to admit any such principle as that. It was not fair, nor was it calculated to benefit the trade or any other section of the community. Let that be done for the chemists which was done for his own profession in 1815, when the Apothecaries' Act was passed, when every man who was practising before the passing of the Act was entitled to register. He did not deny that it was desirable that the chemists and druggists should be better educated, or that a certain apprenticeship should be served, but he did deny the right of any society, having once admitted a man by the payment of two guineas at some particular time, to say that that made him a better chemist than another. He thought that all should start fair—that those who were in practice should continue so, and then they could make their future examinations as strict as they liked.

Mr. JEPSON proposed "The United Society of Chemists and Druggists," and this was responded to by Mr. DOBB, who, in an energetic speech, showed the benefits that had arisen from its operations.

Other toasts, including the president and other officers, and the local newspapers, were given, and the proceedings lasted until a late hour.

On the evening of the 9th ult. a *conversazione* was held by the Association at Messrs. Dixon and Bush's rooms. Messrs. Chadburn contributed a collection of stereoscopes, microscopes, and magneto-electric machines. Mr. W. Brown, jeweller, lent a remarkable musical box; Messrs. Pawson and Prailsford a series of views of the Bradfield flood; Mr. Tully several beautiful photographs; and Messrs. Hornby and Elliott many striking examples of microscopic crystallisation. Dr. Allan brought a variety of curious and interesting articles, amongst the number being a silk handkerchief having a lace-pattern printed upon it by photography.

The room, which was kindly lent by Messrs. Dixon and Bush, presented a lively and animated appearance, the walls being adorned with pictures, and altogether a pleasant reunion of the chemists of the town, with many strangers, was the result. The conversation and amusement were sustained till ten o'clock, and from the members constantly coming and going, there could not have been less than 400 to 500 visitors during the evening, notwithstanding the inclemency of the night.

## PHARMACEUTICAL SOCIETY.

### DISTRIBUTION OF PRIZES.

At the October meeting of the Society medals and certificates were awarded as follows:—*Chemistry and Pharmacy*: Medal—Alfred R. Hall; Certificates of Merit—Frank Oldfield, Francis C. Clayton. *Botany and Materia Medica*: Medals—Frank Oldfield and Gilbert W. Selfe (equal); Certificates—Francis C. Clayton, Sidney Applegate, Henry W. Harris, John A. Thomas. *Practical Chemistry*: Medal—Alfred Rose; Certificates—Francis C. Clayton, Henry W. Harris. *Pereira Medal*: Alfred Rose; Passed with Honours—C. R. Amore, J. Barrett, F. C. Clayton, J. M. O. Eminson, F. Oldfield, J. C. Preston, E. Rickards. *Prizes for Herbaria*: Silver Medal—James W. White; Certificate of Honour—Isaiah Tansley. *Junior Jacob Bell Scholarships*: Sidney Applegate, Alfred R. Hall.

### BENEVOLENT FUND.

A meeting for the purpose of granting two annuities from this fund of thirty pounds each took place at the house of the Society on Friday, October 27; Mr. Sandford, President, in the chair.

Scrutineers having been appointed, and the votes examined, the chairman, on the report of the scrutineers, declared the following result:—

David Peart . . . . .	875	Wm. J. Froom . . . . .	734
Charlotte Goldfinch . . . . .	857	Thomas Novis . . . . .	188

David Peart and Charlotte Goldfinch were therefore declared to be duly elected.

The votes polled for the unsuccessful candidates may be brought forward for four succeeding elections.

## PROFESSOR LINDLEY.

THE death of Dr. John Lindley, the distinguished Professor of Botany in University College, was announced on the 3rd inst. Dr. Lindley was born on the 5th February, 1799, at Catton, near Norwich, where his father was proprietor of a large nursery garden. After leaving the Grammar School of Norwich, he devoted his attention to botanical science. In 1819 he published a translation of *Richard's Analyse du Fruit*, and in 1820 a work entitled *Monographia Rosarum*, in which he described several new species of roses. About the same period he contributed to the *Transactions of the Linnean Society* various papers on botanical subjects. Some time afterwards he proceeded to London, where he became Assistant Secretary to the Horticultural Society, and was engaged by Mr. Loudon to write the descriptive portion of his *Encyclopædia of Plants*, the merit of which, as a botanical work, was entirely due to him, as was stated in the Preface. The *Encyclopædia* was completed in 1829. In the same year he was appointed Professor of Botany at the London University. At this period the Linnæan system was almost universally followed by English botanists. It is one of the chief merits of Dr. Lindley that he early saw the necessity of superseding the artificial by the natural classification of plants. In an essay on this subject, published in his *Introduction to the Natural System of Botany*, published in 1830, he showed very clearly what the advantages of this system were, and thus paved the way for its general adoption in England. Two years later he published the *Introduction to Systematic and Physiological Botany*, and a *Synopsis of the British Flora*, in which our indigenous plants were arranged and described for the first time according to the natural system. In a *Natural System of Botany*, published in 1836, Dr. Lindley took new views of botanical classification, and proposed a new nomenclature for the families of plants. Ten years later, his great work, *The Vegetable Kingdom*, was published. This work, the most elaborate that had appeared on systematic botany, gave a description of all the families of plants, and more especially of those useful to man. It gave very extended lists of the genera, and was generally recognized as one of the most important contributions which had at that time appeared on systematic botany. While engaged in writing these works, Dr. Lindley was most diligently employed, as a practical botanist, in describing new species, on which he wrote a large number of papers contributed to botanical publications. In 1841 he became editor of the *Gardeners' Chronicle*, a weekly publication, which he conducted with great ability. In 1860 he was appointed examiner in the University of London. He was a Ph.D. of Munich, and a Fellow of the Royal Society, of which in 1853 he received the medal as a reward for his services to botanical science.

## LAW AND CRIME.

### HARRISON v. BRIERLY.

THIS case was tried before Mr. Baron Bramwell at Manchester. The action was for fraudulent misrepresentation of the value of a chemist's and druggist's business, stock, and fixtures which the plaintiff had thereby been induced to purchase at a price far above their value. The jury found that there had been a fraud, and brought in a verdict for the plaintiff, with a farthing damages.

On the 4th inst., Mr. W. Saunders moved the Court of Exchequer to increase the damages, or for a new trial, on the ground that the verdict was perverse.

The Court said that they had no power to grant the rule asked for, and took time to consider as to the second.



## A CHEMIST'S WIFE ROBBED.

At the Mansion House, on the 9th instant, Andrew Lacey was charged with picking the pocket of Mrs. Elizabeth Furley, and robbing her of a purse containing 8s. 6d. The complainant is the wife of a chemist, at Dalston, and about noon that day she was crossing Mansion House Street, where there was an immense crowd assembled to see the Lord Mayor's state carriage leave the Mansion House to join the procession at Guildhall. She felt the prisoner's hand in her pocket, and on her raising an alarm, he threw the purse on the pavement, and endeavoured to make his escape. The prisoner, who was proved to be a very old offender, was remanded.

## GAROTTE ROBBERY.

At the Middlesex Sessions on the 6th inst. Jeremiah Connell, 19, was indicted for assaulting Richard Stringer Starkie, and violently stealing from his person one gold watch, one gold chain, and a locket, value £28, his property.

The prosecutor, who is a chemist, residing at 4, Strand, on the evening of the 23rd ult., was passing down Endell-street, by the baths, when the prisoner rushed up against him, passed his arm round his neck, and with the other tore his watch and chain violently from his waistcoat pocket, and then ran away. He ran after him, calling "Stop thief!" and at length caught him. Prosecutor asked him for the watch, and he said, "I have not got it," but being told he would be charged he slipped the watch into his hands. He was handed over to a constable, and he told the officer that some one gave him the watch. On the way to the station he tried to slip his coat off and to get away. He also tried to bite the constable, and was with difficulty secured.

The jury found the prisoner *Guilty*.

He was sentenced to two years' imprisonment, with hard labour.

## ALLEGED POISONING BY A WIFE.

A shoemaker at Honiton Clyst, South Devon, died on Saturday, the 4th inst., under suspicious circumstances, and his wife has been apprehended on a charge of having wilfully administered poison. For some time past she had lived unhappily with her husband, the latter being jealous of a shoemaker in his employ, with whom the wife was on very intimate terms. When about to be searched by the police, the woman took out of her pocket a small packet and threw it into the fire, and it was destroyed almost immediately. Peculiarities were observed in its ignition, and it is supposed to have contained some chemical substance. Some wetted powder was found in the deceased's bedroom, and part of it is preserved. The deceased had several fits before his death. The contents of a glass and utensil have been forwarded to Professor Herapath for analysis. The coroner's inquiry was adjourned to allow of a *post-mortem* examination being made, and the prisoner was brought before the magistrates and remanded.

## POISONING CASES.

## BY VERATRIA.

At Greenwich, on the 19th ult., Mr. C. J. Carttar, coroner for West Kent, resumed an inquiry into the circumstances attending the death of Mrs. Elizabeth Reeve, aged 40, wife of a veterinary surgeon, and which occurred under very mysterious circumstances on the morning of August 15 last.

On a previous occasion Professor J. E. R. Rodgers gave the results of his examination of parts of the body of the deceased, two quantities of wine, and the remainder of the mixture and powders prescribed by Mr. Hope's assistant. He found the kidneys diseased as in "Bright's disease." Different parts were subjected to a distinct system of analysis, mercury and antimony being first searched for, but there was no trace whatever of any metallic poison. In the wine he found an alkaloid, being a separation from various plants, and which gave indications of the presence of a deadly poison known as veratria, or white hellebore. In the kidneys, viscera, and portions of the liver he found the same traces in minute but clear quantities, and in the stomach the poison was in greater quantities. One-fourth of a grain of this poison would be dangerous to life, whether swallowed or

taken into the system in any other manner. Half-a-grain would be very dangerous, and death would take place in from sixteen to twenty-four hours. The poison was used externally for neuralgic pains. He had tested the medicines prescribed by Mr. Hope's assistant; they were perfectly pure. The poison had been absorbed into the blood of the deceased, but from the quantities traced, he had no doubt that enough might be detected to cause death.

The Coroner, in summing up the evidence, said there could be no doubt on the minds of the jury, after the evidence of Professor Rodgers, that the deceased had died from the effects of hellebore, a very deadly poison. The question then remained for them to consider how and in what manner this poison was administered, if administered by any one, or whether the deceased had taken it herself with the intention of procuring abortion, dreading her confinement. He thought this latter assumption extremely improbable, especially with a married woman, and who was described as a good and a kind mother. Such attempts were not usually made except by women who were either unmarried or who were living profligate lives. Indeed, during his experience as a coroner, now extending over a period of thirty-three years, and although he had held at least 20,000 inquiries, he never recollected such an instance. He had also held many inquiries regarding deaths, or rather suicides, by poisoning, and, except in cases of medical men—and he was happy to say these were rare instances—it was never found that persons committing suicide had such a knowledge of the poison they were taking—as to the exact quantity necessary to destroy life—as to render its detection difficult. In the present case the jury would recollect that, according to the evidence of Professor Rodgers, the deadly poison named would effect its object in perhaps sixteen, or twenty-four, or even thirty hours, but that it would produce vomiting and convulsions in a much less time. From the entries which had been made by Mr. Reeve in his diary it appeared that within five minutes after the deceased took the first dose of the saline mixture prescribed by Dr. Hope's assistant she complained of its nauseousness, and became sick. Fortunately, five out of the six doses of this mixture which had been sent remained untouched by the deceased, and having been submitted to Professor Rodgers, they had been declared by him to be perfectly pure and harmless. The learned coroner remarked, in conclusion, that although there was positively no legal evidence before the jury to warrant them in returning a verdict of "Wilful Murder" against any person, which, if they were to do, might be the means of allowing the really guilty to escape, yet it would be safe for them to return such a verdict as would leave the case still open for further inquiry. The jury returned the following verdict:—"That the deceased Elizabeth Reeve came by her death on August 15, 1865, from the effects of a deadly poison known as veratria, or hellebore; but how, when, or by whom such poison was administered there is not sufficient evidence before them to show. The jury, however, wish to add that in their opinion the taking of such poison was not the act or deed of the deceased herself." The inquiry then terminated.

## BY EMERALD GREEN.

On the 18th ult. Mr. Humphreys, coroner for Middlesex, held an inquiry touching the death by poison of Mrs. Jane Fricknell, aged 51. The deceased was the widow of a police-sergeant, and resided with her brother, Mr. W. H. Castor, at 21, Central-street, St. Luke's. Being much depressed in mind, she latterly gave way to habits of intemperance, and on Saturday last her brother remonstrated with her. She went into the shop, an Italian warehouse, and took a cupful of emerald green powder out of a cask. She mixed the powder in water and drank it off; after which she went to her brother and said, "I have drunk poison; I am now going up stairs to die." He sent for Dr. Langford, who prescribed for her, but death supervened in twelve hours. The quantity of emerald green taken by the deceased was sufficient to poison ten persons. The jury returned a verdict of "Suicide while in a state of unsound mind."

## BY OIL OF VITRIOL.

An inquest on the body of Albert William Thresh, a young man who committed suicide by taking oil of vitriol on the morning of what was to have been his wedding-day, was held



by Mr. Langham, on the 20th ult. It was shown that the young man, who was of steady habits, had been a good deal depressed in spirits, for which no cause could be assigned, and he had said to a young brother a day or two previously, "I wish it was all over," which the youth understood to refer to the intended marriage. The young lady to whom he was engaged was examined, and said she had had no quarrel with him, and he had never expressed any wish to break off the engagement. The jury found a verdict of "Temporary insanity."

### GOSSIP.

Mr. Edwin Roberts has purchased from his brother, Mr. George Roberts, chemist, West Bromwich, the branch business at Madeley, Salop, which he has managed for the last ten months.

Mr. John Crosland has retired from the firm of Sutcliffe, Crosland, and Mathewman, manufacturing chemists, Lindley, Huddersfield.

John E. Jenkins, apothecary, Stow-on-the-Wold, has made an assignment of his estate.

Messrs. Griffiths and Hickenbotham, surgeons and apothecaries, Vauxhall-grove, Saltley, have dissolved partnership. Mr. E. T. Griffiths will discharge all claims.

Mr. Frederick Green will continue the business lately conducted by the firm of Green and Standley, wholesale druggists, Weaman Street, Birmingham, and Catherine Street, Aston, and will discharge all claims against the late firm.

Messrs. Benson and Dibb, surgeons and apothecaries, Sheffield, have dissolved partnership.

The firm of James Wilde and Son, dealers in druggists' sundries, Russel Street, Manchester, has been dissolved by mutual consent.

The Churchbridge Chemical Manure Works, lately carried on by Messrs. Wildsmith and Co., near Cannock, are to be sold by auction on November 20th.

The Birmingham Chamber of Commerce have appointed a provisional committee to arrange the rules of a National Association for the protection of British Trade Marks, and to promote the enactment of a law to provide for the registration of trade marks in England.

A prospectus has been issued of the Import and Export Fresh Provision Company, with a capital of 100,000*l.*, in shares of 10*l.* to purchase and extend the use of the process patented by Mr. Richard Jones for preserving meat, &c., in a fresh raw state under all circumstances of climate and temperature. Numerous testimonials accompany the prospectus, and the calculation is that a virtually unlimited supply of mutton can be obtained from Australia to be sold so as to realize an ample profit in London at 6*d.* per lb. The price to be paid for the home and foreign patents (not including that for America), together with the factory at Rainham, in Essex, is 32,000*l.*

At a meeting of the Chemical Society, held on the 2nd instant, Mr. W. Tilden, of the Pharmaceutical Society's Laboratory, was formally admitted a Fellow of the Society; and Mr. James Parkinson, Royal School of Mines, and Mr. Frederick Rowe, Colchester, were balloted for and duly elected as Fellows.

On the morning of the 18th ult. a fire occurred at Chiswell-street, Finsbury, on the premises of a drysalter, Mr. Borwick, whose name is familiar to many from his baking powder advertisements. This might have proved a dangerous fire, owing to the extent of the establishment and the nature of the stock in store. Before it was extinguished by the firemen of the Brigade, which has a station close by—at Whitecross-street—two oil casks and some feet of flooring were burnt. The fire is supposed to have been caused by spontaneous combustion.

At the recent examination for prizes in Materia Medica and Pharmaceutical Chemistry, annually given by the Society of Apothecaries, the successful candidates were: 1. George Rolph Raine, Guy's Hospital, a gold medal; 2. William Barrett Burn, St. Bartholomew's, a silver medal, and a book.

Mr. F. R. Clarence, chemist, 12, Crouch-street, Colchester, has disposed of his business at Malton to Mr. John Thomas Ibbs.

A very promising bismuth mine in Spencer's Gulf, South Australia, is now being vigorously worked, and is likely to prove very valuable.

The disinfecting substances recommended by the Commissioners appointed to inquire into the nature of the Cattle Plague are chloride of lime, carbolic acid, and the powder containing both carbolate of lime and sulphite of lime. "The latter" they say "is probably the best; it contains a well-known disinfecting substance which is formed when sulphur is burnt, and also a strongly antiseptic material, kreasote, from coal tar."

### GAZETTE.

#### BANKRUPTS.

FLETCHER, JOHN, Salterhebble, drysalter.  
JORDAN, SAMUEL, Bristol, dentist.  
LEWIS, F. H., late of Lark-hall-lane, chemist.  
POPJOY, JOSHUA JOSEPH B., Accrington, surgeon.

#### PARTNERSHIPS DISSOLVED.

BARON, E. H., and BROTHER, Chorley, chemists.  
GREEN, F., and Co., Birmingham and Aston, wholesale druggists.  
WILDE, J., and SONS, Manchester, dealers in druggists' sundries.

#### SCOTCH SEQUESTRATIONS.

EGLINGTON, W., Glasgow, drysalter.  
TATTE, J., Glasgow, drysalter.

### ADULTERATION OF FOOD.

ANNEXED year by year to the Inland Revenue Report comes a communication from the Principal of the Laboratory which tells some little of the story of the adulteration of articles of food. It is a chapter of the history of invention and adroitness in the acquisition of wealth by fraud. Perhaps no article subject to revenue duties is more "sophisticated" than pepper. It may be mixed with its own weight of almost worthless ingredients without being rendered unsaleable on the score of want of pungency.

The following case, which has occurred in the past financial year, shows the cautious manner in which adulterated pepper is passed into consumption through the agency of the retailers. A supervisor in a remote part of Scotland purchased from a retailer a sample of pepper which appeared to him to be adulterated. After expressing his doubts to the trader (a woman) as to the genuineness of the article, she replied that her opinion was that the pepper was "not what it ought to be." She also gave the name of the dealer in Glasgow who supplied the article, and produced the invoice, in which this so-called pepper was described, no doubt with a view to escape the consequences of detection, as "capsicum," which is a legitimate article of commerce. At the same time she mentioned the name of another retailer in the neighbourhood who was supplied by the same dealer, and on visiting his premises the supervisor made another purchase. Of these samples the first was found to consist of 25 per cent. of gypsum, the rest being mustard husks and a little cereal starch, and, though a good imitation of pepper, it did not contain a trace of that article. The second sample consisted of 16 per cent. of gypsum, 44 per cent. of mustard husks, a little cereal starch, and the rest pepper. The supervisor in Glasgow was directed to visit the premises of the dealer who supplied the above retailers, and, on doing so, purchased a sample of black pepper, and a sample of an article much resembling pepper, which the dealer called "capsicums." The black pepper was found to be genuine, but the "capsicums" consisted of 6 per cent. of sand, 5 of gypsum, a little cereal starch, the rest being mustard husks. It contained no capsicum. The dealer had no licence to deal in pepper, and stated that he received his stock from a wholesale druggist in Liverpool; but on the inspection of the premises of the latter by the officers in Liverpool no adulterated pepper, nor any substance prepared to imitate pepper, could be found. The dealer in Glasgow was prosecuted and convicted for selling pepper without a licence, and for having in his possession an article prepared to imitate, and intended to be used as, pepper. Coffee is another article much adulterated. There are good reasons for believing that it is now being extensively sold mixed with large proportions of burnt sugar or caramel, a substance of comparatively little value, but one which enables the dealers to command a higher price for coffee con-



taining it than they could obtain for the coffee alone, some of them selling the mixture at even 2s. per lb. Measures are being taken for the suppression of this fraud.

The most usual mode of adulterating beer, and one which, says the Principal of the Inland Revenue Laboratory, there are good grounds for believing is very generally practised by the publicans in London, is to add water to the beverage, the injury to the fulness or "body" of the article arising from this dilution being repaired by the introduction of sugar, treacle, or other saccharine matter—a description of fraud the commission of which cannot, in the present state of chemical knowledge, be satisfactorily proved by analysis. Within the past year thirty-one samples of beer and of materials used by brewers were examined, and of these twenty-three were found to be illicit. In thirteen instances grains of paradise had been used, and in one that drug in conjunction with coriander seeds; in four coriander seeds alone, and in one those seeds with a large proportion of white mustard seeds; two samples contained sweet flag (*Calamus aromaticus*), and another sulphate of iron. No detection of the illicit use of *Cocculus indicus*, tobacco, or other poisonous substances was made.

The stringent measures adopted by the Customs to prevent the importation of simulated wines are still continued, and 182 samples have within the year been examined, of which 102 were found to be composed chiefly of factitious wine, while nearly the whole of the remaining eighty were of very low value, and, although genuine wine predominated more or less in their composition, they still contained considerable proportions of spurious wine. There can be no doubt but that these made-up liquids would have passed into consumption either *per se* as sherry, or mixed with genuine wine. A few instances have been discovered of the sale of drinks under the names of "Indiana brandee," "medicated whiskey," "pure Islay mountain," "Indian tincture," and "red currant cough elixir," the exciting principle of all of which was found to be hyponitrous ether prepared from methylated spirit. The above compounds were all highly stimulating, and it would appear that they are consumed by some of the poor, because they produce intoxication at the cost of only a few pence, while there are good reasons for believing that hyponitrous ether itself, and in some parts of Ireland even sulphuric ether, are used by the needy classes for the same object. It is difficult to see how this evil, so pernicious to the moral and physical welfare of those who indulge in it, can be checked, as the substances under consideration possess more the character of medicines than of ordinary spirits, and may thus be legally kept and sold by any chemist. In such cases all that can be done is to cry, "Buyer, beware." But in view of so many adulterations it is satisfactory to learn that in the educational branch of the laboratory fifty-nine students have now passed through a course of education in chemistry, forming a valuable reserve from which officers may be selected for the Inland Revenue service, and 170 examiners have received a month's instruction in the modes of detecting adulteration.

#### LIEBIG ON THE NUTRITIVE VALUE OF "EXTRACTUM CARNIS."

The following letter from Baron Liebig appears in the *Lancet* of last Saturday:—

"Sir,—I see that rather contradictory views are expressed by different English writers on the value of the Extract of Meat, some taking it to be a complete and compendious substitute for meat, whilst others assert that it has no nutritive value whatever. The truth, as is usually the case, lies in the middle; and as I was the first who entered more fully into the chemistry of meat, I may be allowed shortly to state the results of my investigations, as far as the Extractum Carnis as a nutriment is concerned.

"Meat, as it comes from the butcher, contains two different series of compounds. The first consists of the so-called *albuminous* principles (*i.e.*, fibrin and albumen) and of glue-forming membranes. Of these fibrin and albumen have a high nutritive value, although not if taken by themselves. The second series consists of crystallizable substances—*viz.*, creatin, creatinin, sarcin, which are exclusively to be found in meat; further, of non-crystallizable organic principles and

of salts (phosphate and chloride of potassium). All of these together are called the *extractives of meat*. To this second series of substances beef-tea owes its flavour and efficacy; the same being the case with Extractum Carnis, which is, in fact, nothing but solid beef-tea—that is, beef-tea from which the water has been evaporated. Besides the substances already mentioned, meat contains, as a non-essential constituent, a varying amount of fat. Now, *neither fibrin nor albumen* is to be found in the Extractum Carnis which bears my name; and gelatine (glue) and fat are purposely excluded from it. In the preparation of the Extract the albuminous principles are left in the residue. This residue, by the separation of all soluble principles, which are taken up in the extract, loses its nutritive power, and cannot be made an article of trade in any palatable form. Were it possible to furnish the market at a reasonable price with a preparation of meat combining in itself the albuminous together with the extractive principles, such a preparation would have to be preferred to the Extractum Carnis, for it would contain *all* the nutritive constituents of meat. But there is, I think, no prospect of this being realized. Happily, the albuminous principles wanting in the extract of meat can be replaced by identical ones derived from the vegetable kingdom at a *much lower price*. Just the reverse is the case in regard to the *extractive* matters of meat, for (their salts excepted) it is impossible to find any substitute for them. On the other hand, they may be extracted from the meat and brought into the market in a palatable and durable form. In conjunction with albuminous principles of vegetable origin they have the full nutritive effect of meat. From the extractive matters, then, contained in Extractum Carnis in a concentrated form, the latter derives its value as a nutriment for the nations of Europe, provided it can be produced in large quantities and at a cheap rate from countries where meat has no value.

"The albuminous principles of vegetable origin are principally to be found in the seeds of cereals, and the European markets are sufficiently provided with them. On the other hand, the supply of fresh meat is insufficient, and this will get worse as the population increases. For an army, for example, it will not be difficult to provide and store up the necessary amount of grain or flour. Sugar, too, as well as fatty substances and the like, will be procurable, their transport and preservation offering scarcely any difficulty. But there may easily occur a deficiency of fresh meat. Salted meat but inadequately replaces fresh meat, because in the process of salting a large quantity of the extractive principles of the meat are lost; besides, it is well known that those who live on salt meat for a continuance become subject to different diseases. Dried meat generally means tainted meat scarcely eatable. Extractum Carnis, combined with vegetable albumen, enable us to make up the deficiency; and that combination is the only one at our disposal. What was said of an army also holds good of those European nations in general that do not produce a sufficiency of meat. By making the most of the herds of South America and Australia, in using them for the preparation of Extractum Carnis, and by the importation of corn from the West of United States and other corn-growing countries, the deficiency may be made up, although not to the full extent. For supposing ten manufactories, producing together ten millions of pounds of extract of meat from a million oxen or ten millions of sheep, that whole quantity would provide the population of Great Britain only with *one pound yearly* for every *three persons*—that is, *one pound a day* for every 1,100 persons.

"I have before stated, that in preparing the extract of meat, the albuminous principles remain in the residue; they are lost for the nutrition, and this certainly is a great disadvantage. It may, however, be foreseen that industrial ingenuity will take hold of this problem and solve it, perhaps by a circuitous road. For if this residue, together with the bones of the slaughtered beasts, be applied to our fields as manure, the farmer will be enabled to produce a corresponding quantity of albuminous principles, and to better supply our towns with them, either in the shape of corn, or of meat and milk. Made into a marketable state it may hereafter replace the Peruvian guano, which very soon will disappear from the market.

"On the value of extract of meat, as a medicinal substance, it is unnecessary to say a word, it being identical with beef-tea, about the usefulness and efficacy of which opinions do not differ. At the same time I may remark that it is a mistake



to think that beef-tea contains any albumen—that there ought to be any gelatine or drops of fat to swim on its surface. Beef-tea does not contain any albumen, and, if rightly prepared, ought to be free from gelatine (or glue), whilst the supernatant drops of fat form a non-essential and, for many, an unwelcome addition.

"I should be glad if these lines could assist in clearing up public opinion on the value of extract of meat as a nutriment: my aim being, on the one hand, to reduce to their right limit hopes too sanguine; on the other, to point out the true share which the extract of meat can have in the nutrition of the people of Europe. In doing this, I know full well, that whatever may be said for its recommendation would be in vain, if the extract of meat did not supply a public and generally felt necessity, and if it could not stand the test of our natural instinct—a judge not to be bribed.

"I am, Sir, your obedient Servant,  
"Munich, November 1865. "JUSTUS LIEBIG."

[The process for preparing "Extractum Carnis," given in Liebig's "Familiar Letters on Chemistry," is as follows:—Chopped meat, deprived of all fat, is boiled for half an hour with eight or ten times its weight in water, which suffices to dissolve all the active ingredients. The decoction must, before it is evaporated, be most carefully cleansed from all fat (which would become rancid), and the evaporation must be conducted in the water bath. The extract of meat is never hard and brittle, but soft, and it strongly attracts moisture from the atmosphere. The boiling of the meat in the first instance may be carried on in clean copper vessels, but for the evaporation of the soup, vessels of porcelain should be used. Liebig's process for making beef-tea is as follows:—Raw beef (recently killed)  $\frac{1}{2}$  lb., distilled water 22 $\frac{1}{2}$  oz., common salt 50 grains, dilute hydrochloric acid 16 drops; macerate the beef, chopped very fine, in the water, etc., for an hour and a half; strain off through a fine hair-sieve; take two tumblers daily.]

THE SPONGE DIVERS OF CALYMNOS.—Some interesting details of the sponge trade of the Levant are given in Mr. Newton's recently-published narrative of his travels and discoveries. The island of Calymnos is celebrated for its sponge divers, who sail in a fleet of caiques for the coast of Asia Minor and Syria during the month of May, and fish up annually £16,000 worth of that valuable substance. The diver descends holding a flat stone in both hands to assist him in sinking, on which stone a cord is fastened. When he gets to the bottom he puts this flat stone under his arm, and walks about in search of sponges, putting them in a net hung round his neck as fast as he uproots them; he then pulls the cord as a signal, and is drawn up again. It is said that the best divers can descend to a depth of thirty fathoms, and that they can remain under water for as long a period as three minutes. From inquiries made by Mr. Newton, it does not appear that they are often cut off by sharks, though these monsters are not unfrequent in the southern part of the Archipelago. It is possible that the rapid descent of the diver may scare away this fish, who generally seizes his prey on the surface. A Calymniote told Mr. Newton that the most terrible sensation he had ever experienced was finding himself close to an immense fish at the bottom of the sea. Under the roof of the sponge is a parasitical substance of a caustic nature. This often bursts when the sponge is suspended round the diver's neck, and the liquid it contains causes deep ulcers in his flesh. Before exportation the sponges are cleansed and spread out in fields to dry. Acres of them may thus be seen exposed in fine weather. Sponges are sold by weight, and formerly the weight used to be increased by introducing a little sand. To prevent this fraud, the merchants insist upon their being filled with as much sand as they can hold, and as this amount can be accurately calculated, it is deducted from the gross weight.

PHARAOH'S SERPENTS.—In the Vice-Chancellor's Court to-day, Mr. Malins, on behalf of M.M. Barnett and Roussille, will move for an injunction to restrain Mr. William Leuchars from selling, in boxes bearing the plaintiffs' labels, any "serpents" not manufactured or sold by the plaintiffs. We understand that a well-known firm of wholesale chemists in Dublin have been threatened with legal proceedings by the patentees of these chemical toys.



LONDON, NOVEMBER 15, 1865.

CORRESPONDENCE.—All communications should be addressed to the Editor, at 24, BOW-LANE, E.C.; those intended for publication should be accompanied by the real names and addresses of the writers.

QUERIES.—The Editor cannot undertake to attend to those which are anonymous, or to send answers through the post.

SUBSCRIPTION.—The subscription to THE CHEMIST AND DRUGGIST is 5s. per annum, payable in advance. Should a receipt be required, a stamped envelope must be sent with the amount of subscription. A specimen number may be had upon application, price 6d.

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THE CHEMIST AND DRUGGIST is published on the Fifteenth of every month, except when that date falls upon a Sunday, when it is published on the preceding day. It is regularly supplied direct to the Members of the Trade in Great Britain, Ireland, the Colonies, and all the principal seats of foreign commerce.

Everything intended for insertion in the current Month must be sent in before the 10th, except Employers' and Assistants' Advertisements, which will be received until 9 a.m. on the morning previous to publication.

#### ANNUAL FESTIVAL OF THE UNITED SOCIETY.

ON Wednesday next, the fourth annual dinner in aid of the Benevolent Fund will take place at the London Coffee House. Thomas Hughes, Esq., M.P., has kindly consented to occupy the chair. We sincerely hope that there will be a large attendance, and that the list of donations may be a long one. For full particulars respecting this Festival, we refer our readers to the announcement which appears under the head of "United Society of Chemists and Druggists."

#### THE SALE OF QUININE WINE.

THE letter of "A York Outsider," which we print in another column, leads us to reproduce the correspondence, which forms the subject of an article in the *Pharmaceutical Journal* of the present month.

In our own journal for December, 1863, we printed the following letter received from the Board of Inland Revenue by the Secretary of the United Society of Chemists and Druggists:—

Inland Revenue Office, 3rd December, 1863.

SIR,—Having laid before the Board your letter of the 10th ult., requesting information respecting the sale of medicated wines, with special reference to orange quinine wine, I am desirous to acquaint you that the Board are advised that whenever these articles are held out by label or advertisement as beneficial to persons suffering from any ailment affecting the human body, they can only legally be sold under a patent medicine licence, and with a stamped label on each package, and also, in strictness, under an Excise foreign or British wine licence, according to the character of the wine.

The Board, however, have instructed me to add, that, except in case where there may be reason to believe that a beverage is being sold under colour of a medicine, they will not interfere with the sale, without a patent licence, of medicated wines of the description adverted to, provided that such medicines do not fall under the category of Patent Medicines.

I am, Sir, your obedient servant,  
WILLIAM CORBETT, Secretary.

A similar communication was addressed to the President of the Pharmaceutical Society, and published in the Society journal for January, 1864.

The publication of these letters by the two organs of the trade removed all doubts respecting the liability of dealers



in medicated wines; but in June last the Excise suddenly altered their determination not to interfere with the sale of quinine wine, and informed Mr. Waters, the original maker of this popular remedy, that his preparation could not be sold without a wine licence. This unexpected interference gave rise to the following correspondence:—

2, Martin's-lane, Cannon-street, July 25, 1865.

To the Honourable the Board of Inland Revenue.

GENTLEMEN,—My attention has been called by the Supervisor of Excise of this district to your decision respecting the sale of quinine wine. He informs me that your Honourable Board have decided that the sale of this article requires a British wine licence. As your decision in this matter materially affects my trade, and the sale of an article that is universally admitted to be a boon to humanity itself, I humbly pray to be allowed to state various reasons why your Honourable Board should withdraw your late decision.

That my wine is called "Waters's Quinine Wine," a label of which I enclose, and that, as the maker of it, I have for years paid a licence (being a dealer in British wines).

That on December 3, 1863, your secretary, Mr. William Corbett, wrote a letter (copy enclosed), in which it was stated your Board would not interfere with its sale. Upon the strength of that letter your petitioner has incurred considerable expense in informing his customers that no licence was required, and has in each case referred them to your letter.

That since your petitioner has been a maker of quinine wine, many others have also made and advertised it; in fact, there are few druggists throughout the kingdom who do not make such an article, and probably in no single instance are they called upon to pay a licence.

If this wine is liable, why should not steel wine, antimouial wine, and various other medicated wines be so also?

Your petitioner respectfully begs to call your attention to the fact that, while spirit is liable to a duty, yet methylated spirit is not, the spirit being rendered unfit for consumption; the addition of quinine to British wine renders that totally unfit to be drunk as British wine. There is not one of the patent medicine houses or wholesale druggists in London who do not occasionally send to your petitioner for various small quantities to make up their assorted orders, and your petitioner respectfully submits that it would be neither policy nor justice to compel them to take out a British wine licence. It is true that there are comparatively few cases in which this wine is sold without a licence, as almost all grocers, confectioners, oilmen, &c., take out the British wine licence. Your petitioner, therefore, respectfully submits that your Honourable Board should adhere to their letter of December 3, 1863, and that the trade in an article of so much real good should be left unfettered, and its sale not interfered with by the Excise throughout the country; and that, had your letter not been penned, this question could not have arisen. Your petitioner would be most happy to be permitted to appear before your Honourable Board to give any further explanation you may require.

I am your obedient servant,

ROBERT WATERS.

Inland Revenue, Somerset House, 29th July, 1865.

SIR,—With reference to your application dated the 25th instant, the Board desire me to inform you that the letter of which you enclose a copy was an answer to one from the secretary of the United Society of Chemists and Druggists, the question before the Board at that time being, as put by the President of the Pharmaceutical Society, whether, when wine was used as a menstruum for medicinal substances, and as medicine and medicine only, so as to be entirely taken out of the category of beverages, the Board would exact the licence duty payable on the sale of wines.

On the other hand, it appears in the present case that the wine is notified and used as a tonic beverage, and that the vendors could no more be exempted with propriety from the wine licence (unless in cases where this wine is sold under stamp and licence as a patent medicine) than the vendors of bitter ale, which is likewise considered and advertised as a tonic, could be exempted from the beer licence.

I am, Sir, your obedient servant,

ADAM YOUNG.

R. Waters, Esq.

2, Martin's-lane, Cannon-street, August 3rd, 1865.

To the Honourable the Board of Inland Revenue.

GENTLEMEN,—In reply to your letter of July 29th, your petitioner begs further to be allowed to urge upon your Honourable Board the fact that your letter of December 3, 1863, distinctly gives the public to understand that you would not interfere with the sale of medicated wines, except in cases where there may be reason to believe that a beverage is being sold under colour of a medicine. This, your petitioner submits, especially applies to his preparation of quinine wine, which cannot be used at all as a beverage, as it is well known quinine, from its extreme bitterness, and the effect it has upon the system, prohibits its use entirely except as a medicated wine. This is not the case with bitter ale, that article being simply a malt liquor more strongly impregnated with hops than other kinds, and is to all intents and purposes a beverage, and that only. Your petitioner would also submit that he would be a great sufferer by your present decision, and that, having permitted the letter authorizing its sale as a medicated wine to be published, it would now be a great hardship and injustice to reverse your previous judgment.

Your petitioner, therefore, humbly submits that the matter be again taken under your consideration, as the amount of revenue which could by any possibility be derived from it would not compensate for the annoyance the trade would be put to. Your petitioner may here mention that, having reported your decision to two of the largest patent medicine houses, the reply has been that they shall at once give up its sale, and your petitioner has reason to believe that this will be the case with most druggists throughout the kingdom.

Your obedient servant,

ROBERT WATERS.

Inland Revenue, Somerset House, 31st August, 1865.

SIR,—The Board having had before them your further application of the 3rd instant, I am directed to acquaint you that it had appeared to them from their previous information, that your preparation, "Orange Quinine Wine," was sold as a beverage, and not as a medicine. But, after further inquiries, they are inclined to think that it is more properly classed with medicines, and that the patent medicine licence and stamped label are required for its sale.

This, however, does not make any substantial difference in the decision of the Board as already expressed. They have already stated that, if the patent-medicine stamped label and licence are used, they will not require a British wine licence to be taken out by the vendors of the orange quinine wine; the British wine licence-duty would be imposed only in cases where the vendor, by neglecting or refusing to use the patent-medicine stamped label and licence, might show that he sells the orange quinine wine rather as a beverage than as a medicine.

I am, Sir, your obedient servant,

ADAM YOUNG, Assistant Secretary.

Referring to this correspondence our pharmaceutical contemporary writes:—"It will be observed that the decision of the Commissioners, or at any rate the form in which it is expressed, in this case, differs essentially from that communicated on the former occasion. This decision, it is true, relates only to one particular preparation—Waters's quinine wine,—while the letter of December, 1863, related to medicated wines generally. It is possible there may be something in the circumstances under which Waters's quinine wine is sold that renders it liable to the stamp duty, and which would not apply to the preparation as usually made and sold by chemists and druggists. We do not think our members need be under any apprehension, while they make quinine wine with not less than a grain of quinine to the ounce, and sell it without recommending it for any particular complaint, that any attempt will be made by the Excise to interfere with its sale. The Board admit that even Mr. Waters's quinine wine should be considered a medicine rather than a beverage, and its sale must therefore be subject to the laws relating to other similar preparations."

## THE CHEMIST AND DRUGGIST AT THE DUBLIN EXHIBITION.—III.

MESSRS. BRYANT AND MAY, Fairfield Works, Bow, London, are well known as match-makers, and appear in the Dublin Exhibition as the originators of many improvements in their art. The most important of these is the introduction of a patent safety match, which will only ignite upon the surface of the match-box. This is done with the aid of amorphous phosphorus. Amorphous, or the red modification of phosphorus, was first noticed by Berzelius and subsequently described by M. Emile Kopp in 1844, and M. Schröter in 1848. On the appearance of the researches of the latter chemist it was almost immediately produced on a manufacturing scale by Mr. Albright, of Birmingham, and, although so many years have since elapsed, and its advantages are so very self-evident, the old lucifer matches, made with ordinary phosphorus, still hold their ground. The numerous advantages of amorphous phosphorus may be enumerated as follows:—It is unalterable in the air. This is not strictly true, as the amorphous phosphorus of commerce will frequently absorb oxygen from the air, and gradually deliquesces to an acid fluid, consisting of phosphorus and phosphoric acids. But although the phosphorus becomes a useless mass, the oxidization is never sufficiently vigorous to lead to spontaneous ignition, this being probably due to the high igniting point of the amorphous variety, viz., 240° C. The high igniting point and its non-volatility are also great advantages, indeed, they may be considered as its chief recommendation. The volatility of ordinary phosphorus is, as most of our readers are aware, the cause of a terrible scourge to the hands employed in the manufacture of lucifer matches. The *phospho-necrosis*—the rotting of the jaw-bone—is a disease, the malignancy of which is not appreciated by the public because it is in a measure restricted to the match-makers.

Although the igniting point of amorphous phosphorus is so high, it has been found that it readily ignites in the presence of nascent oxygen (usually generated from chlorate of potash). This is frequently the case with oxidizable substances. Thus, some of the metallic sulphides, which are incapable of combustion in the diluted oxygen of the atmosphere, will ignite violently when brought into contact with chlorate of potash, and this phenomenon has been the basis of many attempts to construct lucifer matches without phosphorus; but so far, in an industrial point of view, such experiments have been failures. The attempts to introduce amorphous phosphorus had nearly met a similar fate, probably due to the fact that at first the proportioning of the com-



pounds was not understood, and the result was an explosive ignition, accompanied with a spluttering. As these difficulties are being overcome the introduction of amorphous phosphorus is slowly progressing; but such matches are far from being in general use. If it were merely from a philanthropic view we ought individually to encourage the use of amorphous phosphorus. For every ordinary match that we strike we add our mite to the infliction of a painful injury upon a large class of labourers.

Messrs. HIRST, BROOKE, AND TOMLINSON, Bishopgate-street, Leeds, are exhibitors of a collection of products of the destructive distillation of wood, viz., acetic acid, acetates, wood naphtha, charcoal, etc. They also exhibit some artificial fruit essences. These products were first brought into notice from an examination made of them by Dr. Hofmann, in connection with the Exhibition of 1851. They have now become regular commercial products, quoted in every price-list of essential oils. Those shown in the Dublin Exhibition are those most commonly used, no novelty being exhibited. The following summary gives an idea of what essences are now found in commerce; they differ in some respects from those originally analysed by Dr. Hofmann in 1851. The *bouquet* of wines, the flavours of fruits, and taste and smell of spirits, depend upon the presence of certain ethers, every one of which can most probably be made artificially. All that is wanted is a correct analysis of the products to be imitated. *Pine Apple essence* consists of butyric ether and oil of lemon, or orange. *Jargonelle Pear essence* is a solution of acetate of oxide of amyl in spirit. *Raspberry essence* generally consists of tincture of orris root, acetic ether, a trace of butyric ether, and colouring. *Essence of Strawberry* is made by mixing the above with essence of pear. *Quince* consists of butyric and valerianic ethers. *Cherry*, essence of vanilla and oil of almonds. *Greengage*, essence of pear, oil of almonds, and bergamot. *Orleans Plums*, pelargonic ether and oil of wine. *Nettar*, a mixture of pear, pineapple, and raspberry essence. *Banana*, essence of pear and valerianic ether. *Ripston Pippin*, a solution of valerianate of amyl oxide in spirit. *Essence of Cognac Brandy* consists of pelargonic ether, tincture of vanilla, and oil of almonds. *Melon*, sebacic ether. *Mulberry*, suberic ether. *Essence of Jamaica Rum*, butyric ether, acetic ether, neroli, and bergamot. *Essence of Whisky*, oil of cedar and a trace of creasote. We may mention here that there are some of these spirit flavours shown in the Zollverein Department, which differ very much from those met with in British commerce. They are exhibited by MM. Renne and Friedmann (Berlin). They are called *Berlin Bitter Oil*, *Corn Brandy*, *Cumin Oil*, *Dantzic Goldwasser Oil*, and *Spanish Bitter Oil*, etc. The following is said to be their composition:—"Muscat lunel," acetic ether, and oil of neroli. The rum essence seems to agree more with our whisky essence, and is said to be aldehyde and creasote.

WILLIAM GOSSAGE AND SONS, Widnes Soapery, Lancashire, show soaps possessing a certain technical interest, from the fact that they emanate from a firm so intimately associated with manufacturing improvements, and from certain specialities in connection with the products exhibited. They are silicated soaps containing a certain admixture of soluble glass, or silicate of soda. The latter compound is a substance in which the soda exists in a state of weak combination with silica, thereby retaining its cleansing properties, just as it does in ordinary soap. "Mr. Gossage having satisfied his mind of the correctness of these facts devoted his attention to the means of preparing the silicate of soda of proper quality, and to the best manner of combining this with ordinary soap, so as to produce a compound soap at a greatly reduced price, yet retaining equal cleansing power with the best tallow soap." Mr. Gossage's soaps also possess the peculiarity of being coloured with the coal tar colours, instead of mineral pigments. From the introduction of silicated soaps the inventor claims that he places in the hands of the public a soap, scented, free from causticity, and solely constituted of detergent matter, for the price of the old crown and other common soaps.

As a short description of Professor JELLET's Saccharometer was promised, it is now given, preparatory to the closing of our notice of the British Exhibitors.

The importance of the aid of such instruments for the chemical examination of bodies is not sufficiently appreciated, although, on the other side, too much reliance may be placed upon physical phenomena. Thus, some years since the

scientific world was set into a ferment by the beautiful experiments of Bunsen and Kirchhoff, in connection with spectrum analysis, sanguine admirers of these extraordinary discoveries were carried so far as to state that the ordinary methods of qualitative chemical analysis would become obsolete, that an ordinary analysis would be done in as many minutes as it then took hours, and so on. Time has sobered down this enthusiasm, and spectrum analysis now holds its proper position in analytical chemistry. Utterly worthless for a general analysis, it remains the most delicate special test, for some five of the elements, four of which five may be considered as amongst our rare, or rarest substances.

Physical phenomena, however, are capable in certain cases of giving answers where chemistry could not. Thus French and American oil of turpentine are undistinguishable by ordinary analyses, as they have the same chemical composition, but they are easily distinguishable by the saccharometer, as it is called, from the fact that they have opposite rotary power. The admixture of turpentine with the products of the distillation of mineral oils (turpentine substitutes) may be determined also, as these fluids are without action upon polarized light, and as we can work quantitatively, we have here alone an important technical application. The determination of sugar and many alkaloids may be also worked out with great precision.

Professor Jellett's saccharometer may be more accurately defined as "an instrument by which the ratio of the rotatory power of any transparent fluid to that of a standard fluid may be determined."

The new apparatus consists of, firstly, a means of obtaining a parallel beam of light; next, a Nicol's prism, by which this beam is polarized. The polarized beam passes through a tube, the ends of which are closed by plates of parallel glass, and this tube has a motion along a graduated bar, and can be made to enter the larger tube containing the turpentine, or other compensating fluid, to any required depth. As the zero of the scale is made to coincide with the point at which the narrow tube dips into the compensatory fluid to the furthest extent possible, it is plain that the reading of the scale will indicate exactly the length of the column of fluid interposed. An analysing prism and an observing lens complete the instrument. We will suppose that we are about to ascertain the strength of a given solution of cane sugar. In this case French oil of turpentine will be the compensating fluid. The small tube is then filled with a sugar solution of known strength, and the zero of the vernier made to coincide with the zero of the scale. The tube is now moved back by means of its milled head until the tints on the two halves of the circular spectrum, and which is seen on looking through the analysing prism, become equal in intensity. The receding of the scale is then noted. Let this be called R, and let S be the strength of the known sugar solution. The sugar solution of known strength is now removed from the tube and replaced by that of which the strength is required. The same process having been repeated, the scale is read, and the new reading called R'. Then the quantity of sugar contained in the unknown solution is obtained by the equation—

$$S' = \frac{R'}{R} S.$$

#### COLONIAL POSSESSIONS.

These are not very extensively represented, if we except Victoria, Canada, and India; but a large percentage of what is exhibited will carry a certain amount of interest for the readers of these papers. There are a considerable number of drugs, oils, and edible seeds, many of them new to British commerce. Mr. P. L. Simmonds (of the *Technologist*) largely contributes in many of these Sections.

#### BAHAMAS.

Turpentine and resin of a very good quality are here exhibited by his Excellency Governor Rawson. These two products are new importations from these islands. Myrtle wax, from the berries of *Myrica cerifera*, is also shown. This wax is remarkable for its green colour, which would appear to be due to the presence of chlorophyll; if so, it would be easily blended, but it unfortunately does not burn well. The *Myrica cerifera* is said by Richard to be abundant in the United States. The berries are covered with a waxy coating of shining whiteness, and on being boiled with water yield



about one-fourth of their weight of the wax. The green colouring matter is removed by ether.

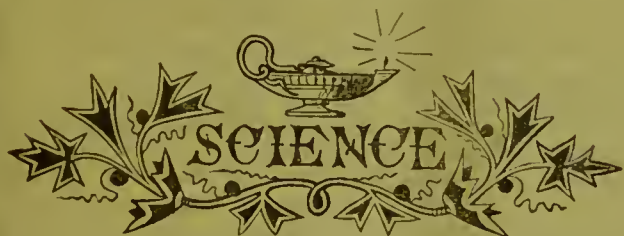
## CANADA.

In the Canadian Department we have of course a specimen of the crude petroleum oil of a better odour than many of the distilled products sent to market. From this it would appear that the disagreeable smell present in the Canadian turpentine substitutes is more due to volatile sulphur compounds generated during the process of distillation, and that therefore by a purification before distillation products might probably be procured equal to the Pennsylvanian oils.

The mineralogical collection in the Canadian Court is very good, and well represents the resources of the country in this respect.

*Graphites, Copper Ore and Native Copper, Bog Ore*, and specimens of cast and wrought iron made from the ore at the Radnor Furnaces, Batiscan, *Magnetite Ore and Red Hematite, Titanic Iron Ore (Ilmenite)*, from a bed of about ninety feet. It contains 48 per cent. of titanic acid. *Chromic Iron Ores, Oehres*, from *Pointe du Lac*. These are prepared for the New York market.

It will be seen from the above that chromium minerals are found to some considerable extent, and, as might naturally be supposed, some chrome products are manufactured. The chrome yellows shown are very brilliant in colour, but the advantages of the chrome green (*Vert de Guignet*) seem to be not appreciated in this colony. True, a bottle of a green pigment is exhibited amongst the colours, but on examination it only proves to be the noxious but pretty arsenical green. A fine Canadian apatite, "containing 90 per cent. of phosphate of lime," is shown by Mr. Rickman, of Liverpool. This is, of course, very valuable as a source of phosphoric acid for manures and manufacturing purposes.



## ON THE DETECTION OF METHYLIC ALCOHOL.

In a communication to the *Pharmaceutical Journal* of the present month, Mr. W. Young, of Ball's Pond-road, describes a method he has adopted for detecting methylic alcohol when mixed with rectified spirit of wine, and for distinguishing between ether and sweet spirit of nitre when prepared from pure and from methylated spirit respectively. The method is based on the change of colour produced by the action of methylic alcohol on a solution of permanganate of potash. The solution, which may be briefly designated "the test," is prepared by dissolving 1 grain of crystallized permanganate of potash in 1 fluid ounce of distilled water. Its application is thus described by Mr. Young:—

"*Spirit of Wine*.—1. If 10 minims of the test be added to 4 fluid drachms of the purest rectified spirit in a test tube, the mixture will be found to retain the bright pinkish colour so characteristic of permanganate of potash, for at least ten minutes, when it gradually fades. As regards colour, this may be taken as a standard for comparison.

"2. Add 10 minims of the test to 4 fluid drachms of the same spirit, previously mixed with 2 per cent. of wood naphtha. The difference between this and the pure spirit is once apparent. The liquid no longer retains its characteristic colour, but almost instantly changes to a dull pale-brown tint.

"3. Add 10 minims of the test to 4 fluid drachms of pure spirit, previously mixed with 10 per cent. of wood naphtha, in methylated spirit. Here the change in the colour of the test is even more striking, the liquid at once assuming a brown tint, as in experiment 2, only in a greater degree. So great is the delicacy of the test, that 1 part of wood spirit in 300 of rectified spirit of wine may be readily detected by its aid; but I imagine it will be mostly valued in the next

application I shall speak of, viz., to sulphuric ether, as no ready method has been published for distinguishing the pure from that containing 10 per cent. of oxide of methyl, prepared from methylated spirit. The pure ether, used in the following experiment, was Howard's make.

"*Sulphuric Ether*.—Take two clean dry test tubes, put 4 fluid drachms of pure ether into one, and the same quantity of methylated ether into the other; place side by side, and add to each 10 minims of the test, mixed immediately before use, with 50 minims of pure rectified spirit, to render it more readily miscible with the ether. The pure ether will retain the pinkish hue, imparted to it by the test, for a considerable time; whilst that made from methylated spirit changes to a pale brown in a minute or so. By adding successive portions of the test, the same effects will be observed, as the oxide of methyl appears to possess the property of decolorizing a considerable quantity of the test.

"*Sweet Spirit of Nitre*.—Previous to applying the test to this spirit, either pure or methylated, I proceed in the way proposed by Mr. Tuck for his iodo-hydrargyride of potassium test (*Proceedings of Pharmaceutical Conference, 1865, p. 21*), best described in his own words: 'Mix the sweet nitre with an equal bulk of solution of caustic potash, twice the strength of the Pharmacopœia solution, and, after allowing the mixture to stand about an hour, distil off an amount of spirit equal to the quantity employed.'

"On proceeding, as in the former experiments, a most marked difference will be perceived, on the addition of the test, between the pure sweet nitre and the methylated, the former retaining, the latter soon losing its colour."

## ON THE MISTURA CREASOTI OF THE BRITISH PHARMACOPŒIA.

BY MR. JOHN TUCK.\*

I believe Dr. Attfield first drew the attention of pharmacutists to the formula given for this preparation in some Lectures on the British Pharmacopœia, delivered before the Pharmaceutical Society; he thought it required to be further investigated, for if, as stated by Pereira and others, Creasote was soluble in water to a greater extent than the proportion in which it was ordered in the Mistura Creasoti, what need of adding acetic acid to dissolve it?

I should perhaps state that this was a Scotch preparation, and the formula given for it in the last Edinburgh Pharmacopœia was as follows:—

Creasote,	
Acetic Acid,—of each . . . . .	16 minims.
Compound Spirit of Juniper,	
Syrup,—of each . . . . .	1 ounce.
Water . . . . .	14 ounces.

Mix the Creasote with the acid, then gradually the water, and lastly the syrup and spirit.

The spirit of juniper here ordered was a proof spirit, made by macerating the berries and seeds with the proof spirit for two days, then adding water and distilling off the whole of the proof spirit.

In the British Pharmacopœia, the Scotch formula was altered to meet the greatly-increased strength of the spirit of juniper there ordered, so that it is now

Creasote,	
Glacial Acetic Acid,—of each . . . . .	16 minims.
Spirit of Juniper . . . . .	½ drachm.
Syrup . . . . .	1 ounce.
Distilled Water . . . . .	15 ounces.

Mix the creasote with the acetic acid, gradually add the water, and lastly the syrup and spirit of juniper.

It will be seen on comparing the two formulæ that the Edinburgh Pharmacopœia ordered an ounce of a proof spirit of juniper, whilst the British Pharmacopœia orders only half a drachm; but then this half-drachm is made with rectified spirit, and contains nearly ninety-five times as much oil of juniper as the compound spirit of juniper of the last London Pharmacopœia.

The acetic acid ordered in the mist. creasoti with the intention of dissolving the creasote is entirely useless, as the

\* Read at the Birmingham Meeting of the British Pharmaceutical Conference.



quantity of creasote there ordered is perfectly soluble without the presence of acetic acid or any other solvent; and even if it were not so, the acid would be still useless in that small proportion, as the creasote is thrown down from it again on diluting it with the water. If the spirit of juniper has been ordered as a flavouring, and to cover the taste of the creasote, it is by no means the best that could have been chosen; it has the disadvantage of making the mixture milky at first, which, however, will become clearer on being allowed to stand for a day or two, by the finely-precipitated oil of juniper coalescing and floating on the surface in the form of very small globules; besides which, the mixture is rendered far more likely to disagree with the patient, in the class of affections for which creasote is generally administered. For these reasons I suggest the following form as, I think, a decided improvement:—

Creasote . . . . .	16 minims.
Syrup of Orange Flower . . . . .	2 ounces.
Distilled Water . . . . .	14 ounces.

Mix the creasote with the syrup, then gradually add the water, shaking the mixture after each addition.

I herewith lay before Conference for it to pronounce its verdict upon them the following specimens of mist. creasoti: No. 1, prepared according to the British Pharmacopœia. No. 2, prepared without acetic acid, but otherwise according to the British Pharmacopœia. No. 3, prepared according to the suggested formula.

It will be seen that the suggested formula contains the same amount of creasote as that of the British Pharmacopœia, that is, one minim to the fluid ounce, and I should here state, that without measuring it two drops will be found as near as can be equal to one minim. The creasote I used in these mixtures was a very fine specimen, prepared by Messrs. Morson and Son, and was exhibited at the late International Exhibition, so that it must have been prepared some three years and a half ago, and although prepared so long it had undergone but very little change in colour. The foreign and much cheaper creasote, or impure carbolic acid, should on no account be used for internal administration; it is of uncertain composition, usually obtained from coal-tar, and only about one-half the price of the creasote ordered in the Pharmacopœia.

In conclusion, I much regret that some member of Conference has not given us an able report on No. 115, or the creasote of commerce; it is a subject that requires a great deal of further investigation, as it is doubtful if any two samples of creasote are the same either in chemical composition or medicinal effect, and I must candidly acknowledge that I know of no reliable test for distinguishing them.

### ON BLUE PILL.

BY MR. F. B. BENDER.\*

The state in which mercury exists in blue pill can be no longer a matter of conjecture among Pharmaceutical Chemists. In the present day men are not much given to placing implicit confidence in supposititious or popular notions, but prove all things for themselves, and it is remarkable that until recently, frequent assertions were made in the medical and chemical journals, that the efficacy of "blue pill" was dependent upon the amount of oxidation which had taken place in the metal; it has, however, been periodically shown that the mercury is simply in a very fine state of division, and my own experiments are only confirmatory of this fact: in no case has the trace of oxide present been at all adequate to produce the effects of blue pill. Nevertheless, mercury in its ordinary condition being inert, it is reasonable to suppose that some further change takes place in it before it affects the system; what this change may be, it is no easy matter to determine, possibly it is oxidation in the stomach, so large a surface being exposed to the action of that organ.

The specimens examined were repeatedly washed with distilled water, to remove the soluble part, and then digested with hydrocyanic acid, by which any oxide present would be converted into cyanide and metallic mercury; but mere traces

only could be detected. The mercury was then separated by solution, in dilute nitro-hydrochloric acid, from which it was precipitated as sulphide; other specimens were treated with dilute hydrochloric acid, which should have converted any suboxide or oxide present into subchloride or chloride; the result was analogous to that obtained by the former process.

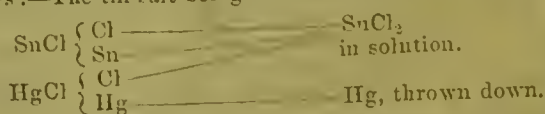
The variation in colour, consistence, etc., in the commercial "blue pill," led me to suppose that the mercury was in a much more finely divided state in some cases than in others, and this supposition was strengthened by the variable amount of boiling requisite to separate it. A microscopic examination at once proved this; in some instances the mercury was so intimately mixed with the other ingredients of the pill mass, that no globules were distinguishable even with a high power, whilst in others they were easily detected by the aid of a pocket lens only.

Assuming that every sample of "blue pill" in the market contains the proper proportion of mercury, it is still an unsatisfactory preparation, lacking that uniformity of condition so desirable in a medicine, and especially in one so commonly prescribed as this. The process by which it is made, is one so tedious and difficult that very few pharmacutists attempt to prepare it for themselves. One of the largest makers informs me that, in order to amalgamate them, he grinds the ingredients together for thirty hours, under a pair of millstones, weighing 1½ tons each.

The directions of the Pharmacopœia are somewhat indefinite,—rub the ingredients together "till globules are no longer visible." Now, supposing this object to have been accomplished, we have a "blue pill," containing mercury, in a finely divided state; but let the mass be still further triturated, and the metal will be yet more finely divided,—it being rather difficult to place a limit to the divisibility of a fluid. Thus, multiplication of particles may be carried on *ad infinitum*, and probably the activity of the pill proportionately increased; it is, therefore, very desirable that some process be devised by which the Pharmaceutical Chemist can make his own pil. hydrarg., and which shall yield a product of uniform composition. By such a process I have prepared some specimens (shown to the meeting). They are of a beautiful blue colour, and the minute state of division in which the mercury exists in them may be easily demonstrated by suspending a few grains in a glass of water.

The mode of preparation I have adopted is as follows:—136 grains of chloride of mercury (corrosive sublimate) are dissolved in 4 ozs. of distilled water, and the solution raised to the boiling-point; an ounce of protochloride of tin is then put into a beaker with 2 drachms of hydrochloric acid, and 2 ozs. of cold water, to which, when dissolved, the mercurial solution is added, and the mixture stirred for a few seconds. The precipitated mercury, in the form of a nearly black powder, is then allowed to subside, washed several times by decantation with dilute hydrochloric acid, to remove any traces of tin, and finally with distilled water. It would, of course, be impossible to dry and weigh this precipitate without causing the excessively minute particles of mercury to unite into one globule; but, as we know that 136 grains of chloride yield 100 grains of metallic mercury this is unnecessary. The water is then drawn off, as nearly as possible, by means of a pipette; 30 grains of sugar, 10 grains of powdered liquorice, and about 5j of glycerin added, and the mass transferred to a warm porcelain slab where most of the remaining water is evaporated at a low temperature, a sufficiency of glycerine and liquorice being used to make the mass weigh 300 grains.

The power possessed by protochloride of tin of reducing salts of mercury, is well known; the decomposition is as follows:—The tin salt being converted into bichloride,



A very high temperature is not requisite to produce change. The solution of the protochloride of tin should be effected without heat, and should not be very dilute, as either case a basic salt is liable to be thrown down, especially if no hydrochloric acid be present. It is desirable also employ a considerable excess of the tin salt to ensure reduction of the mercury; if insufficient be used, calomel will be formed. The precipitate will be found

\* Read at the Birmingham meeting of the British Pharmaceutical Conference.



vary slightly in colour, according to the temperature at which it is produced, but I think that this being uniform, and the solutions of a definite strength, unvarying results may be obtained. The sugar has been added to assist in the preservation of the mercury from oxidation, and the glycerine to prevent the mass from becoming dry.

These appear to be the only precautions necessary to produce a "blue pill," which is, I believe, superior to that obtained by the old process, and which can be prepared by any man who possesses two porcelain bowls, a Bunsen's gas-burner, a tripod, a few grains of common sense, and a little knowledge of pharmaceutical manipulation.



### MODERN CHEMISTRY.

*Introduction to Modern Chemistry, Experimental and Theoretical. Embodying Twelve Lectures delivered at the Royal College of Chemistry, London.* By A. W. HOFMANN, LL.D., F.R.S., V.P.C.S., etc. (Walton and Maberly.) Pp. xv—233. Price 4s. 6d.

*Course of Practical Chemistry, arranged for the use of Medical Students.* By WILLIAM ODLING, M.B., F.R.S., etc. Second Edition. (Longmans, Green, and Co.) Pp. x—241. Price 7s. 6d.

*Dictionary of Chemistry, etc.* By HENRY WATTS, B.A., F.C.S. Parts xxx., xxxi., xxxii. Palm Wax—Phosphorus. (Longmans, Green, and Co.) 2s. 6d. each.

THE three works named above promulgate the creed of our modern chemical philosophers—a creed which differs from that adopted as the basis of every popular text-book of chemistry, almost as greatly as the astronomical system of Copernicus differs from that of Ptolemy. The chemistry taught in most of our schools is not the chemistry accepted by the teachers. A student may thoroughly master his "Fownes," his "Graham," or his "Brande," but still be unable to comprehend the esoteric notation employed in papers read before the Chemical and Royal Societies. This state of things cannot last much longer. The magnificent edifice which has been erected on the ground marked out by Laurent and Gerhardt, though still partially hidden by scaffolding, is obviously a substantial and fairly proportioned structure, affording ample space for the orderly arrangement of the multitudinous facts of modern chemistry; while, on the other hand, the elegant but incommensurable building left by Berzelius is now surrounded by temporary sheds put up to shelter awkward facts. In plain English, the beautiful electro-chemical theory is quite inadequate to explain chemical phenomena, and has already been discarded by the great chemists of all countries. According to this theory every chemical compound was a dual compound; it was either formed by two elements or made up of two binary compounds. Thus lime was a binary compound of calcium and oxygen, sulphuric acid was a binary compound of sulphur and oxygen, and sulphate of lime was made up of the two binary compounds lime and sulphuric acid. Though this theory answered pretty well when applied to mineral chemistry, it failed altogether when applied to organic chemistry. A few organic bodies could be viewed as binary compounds, but the great majority could not be separated even by the imagination into pairs of constituents. Accordingly, chemists soon rejected the notion that organic compounds were produced by the repeated pairing of their constituents, though they long held the opinion that all

mineral compounds were built up in this manner. In thus admitting the imperfect applicability of the electro-chemical theory they virtually acknowledged its artificial character, for there is really no natural line of demarcation between inorganic and organic chemistry. The doctrine that chemical forces should produce dual compounds only in the mineral kingdom, reminds one of Galileo's sarcastic remark, that Nature abhorred a vacuum only to a height of thirty-two feet. This doctrine, however, is still put forward in our text books, and is the basis of the chemical nomenclature and formulæ of our Pharmacopœia. In the "Modern Chemistry" which is so lucidly explained by Dr. Hofmann, a natural system of classification destroys the artificial distinction between inorganic and organic bodies. We may liken the old and moribund chemistry to the Linnæan System of Botany; and the Chemistry adopted by Hofmann, Odling, Brodie, Williamson, Foster, Wurtz, Kekulé, and other philosophical chemists, to the Natural System of De Candolle. The following extract from the preface to Dr. Hofmann's remarkable work will explain the present condition of Chemical science:—

"No chemist will need to be reminded that, during the last quarter of a century, the science of chemistry has undergone a profound transformation; attended, during its accomplishment, by struggles so convulsive, as to represent what, in political parlance, would be appropriately termed a Revolution.

"Amidst continual accessions of fact, so rapid, so voluminous, and so heterogeneous, as almost to exceed the grasp of any single mind, chemical science has been in travail, so to speak, with new laws and principles of co-ordination, engendered, perhaps, partly by the sheer force of their own deeply-felt necessity, but partly also, and mainly due, to the powerful initiative impulsion of a few philosophical master minds.

"Based on the concurrent examination of the volumetric and ponderal combining ratios of certain typical elements, and on the recognition, in their standard combinations, of a few well-marked structural types, these principles have introduced into the domain of chemistry the pregnant idea of *classification*—the conception of a series of natural *groups*, resembling the genera of the biological sciences, and culminating in the establishment of an orderly *system*, where before there had seemed to be but a chaos of disconnected facts.

"Under the influence of these and certain other cognate ideas, new views have arisen as to the constitution and chemical properties of matter; a reformed chemical notation has thence, of necessity, ensued; and the structural relations, previously unsuspected, have disclosed identity of parentage in compounds till then deemed utterly diverse.

"It appears to be wisely ordered, in scientific as in social affairs, that the innovating spirit which belongs to youth has its check and counterpoise in the conservative tendency essentially characteristic of age; so that, in the sharp collision of these rival forces, new principles, in any kind, find a sort of fiery ordeal interposed between their first enunciation and final acceptance; doubtless the appointed test of their soundness and vitality.

"Hence the domain of chemical philosophy has, for many years past, rather resembled a tumultuous battle-plain, than a field bestowed by nature for peaceful cultivation by mankind. The new ideas springing up, of necessity, one by one, and not always free, at their first conception, from errors and inconsistencies, have been resisted by the champions of the old chemical dogmas, as a gratuitous revolt against established authority. Controversy has naturally stimulated research, which, in its turn, has produced rapid modifications of theory; so that the aspect of chemistry has been in a state of incessant change. It is indeed only within the last few years that the new doctrines have acquired a logical consistency, and a consequent ascendancy throughout Europe; auguring, at length, for our long-agitated science, a period of comparative calm. The author's chemical lot, both as a student and as a teacher, has been cast amidst the storms of this controversial period, in which he has felt it his duty to take part on the side of innovation."

The preparation of this "Introduction to Modern Chemistry," is not the least important service rendered by Dr.



Hofmann to the side of innovation. For the want of such a work, students have remained ignorant of some of the most striking and fruitful generalizations of modern science. It is the first broad and masterly sketch of the new chemical edifice—the first work of an essentially general and introductory character proceeding from the modern school. The "Manual," which Dr. Odling commenced in 1861, was intended for advanced students, and we are still anxiously waiting for its completion. Dr. Hofmann offers his book as a parting gift to the students in the country of his adoption, when duty calls him away to labour in another sphere. He dedicates it to Sir James Clark, one of the principal founders of the Royal College of Chemistry, in acknowledgment of his deep debt of gratitude to one whose sympathy has so kindly and constantly sustained him in endeavouring to promote in England, the great cause of chemical education.

A course of lectures, delivered in the College of Chemistry, forms the framework of the treatise; and in preparing his lectures for the press, Dr. Hofmann introduced such additional matter as appeared desirable for the more complete elucidation of the great laws set forth. "In the performance of this task," we again quote from the Preface, "which came upon him amidst the almost overwhelming pressure involved in the simultaneous completion of old engagements, and preparation for new ones, the author gladly availed himself of the kindly proffered collaboration of his esteemed friend, Mr. F. O. Ward, whose well-known powers of lucid composition, and habits of philosophical thought, will be traced in every chapter of this work. Attracted to the new chemical doctrines by their own intrinsic truth and beauty, Mr. F. O. Ward has willingly devoted himself, for months past, to the task of assisting in their exposition; and in the course of these labours, as was to be expected, he has originated many valuable conceptions for their clearer elucidation and development."

The first two lectures are devoted to an experimental examination of the three typical compounds, hydrochloric acid, water, and ammonia. In the second, the study of these compounds is resumed, in order to ascertain the volumetric proportions in which the elements, hydrogen, chlorine, oxygen, and nitrogen combine. This inquiry brings before us the remarkable relations that exist between the volumes of the constituent gases, and the volumes of the resulting compounds. The fourth lecture teaches us how to express the facts previously determined by experiment in the diagrammatic and literal symbols which have been found such powerful instruments of chemical research; it also expounds the grand conception, that hydrochloric acid,  $\text{HCl}$ , water,  $\text{H}_2\text{O}$ , and ammonia  $\text{H}_3\text{N}$ , are types or models, representing as many groups of compounds, each cast, so to speak, in the same mould, and governed by the same structural law, as its general prototype. The fifth lecture leads us far into the new chemistry, points out the exceptional characters of phosphorus and arsenic, and elucidates the whole system of chemical notation. The sixth lecture introduces us to the fourth typical hydrogen compound, marsh gas,  $\text{H}_4\text{C}$ , which differs from each of the other types, in having a non-volatile constituent. Having examined the four types, which form the main pillars of the new chemical edifice, we are brought into the presence of the compounds of oxygen with nitrogen. The seventh lecture is devoted to these important bodies, and to the law of combination in multiple proportions, which is revealed by their formulæ. The eighth lecture is a masterly treatise on the French metrical system of weights and measures which is now adopted as the standard of reference by the leading chemists of all countries. For the sake of this lucid exposition of the metrical system, even those who do not care to study chemical philosophy should purchase Dr. Hofmann's book. As a convenient unit of volume, for the use of chemists, the author proposes the cubic decimetre, or one litre; and as a corresponding unit of weight, 0.0896 gramme, or the weight of this measure of pure hydrogen taken at  $0^\circ\text{C}$  temperature, and  $0\text{m}76$  pressure. This litre-weight of hydrogen, he terms a *crith*, from a Greek word, signifying a barley-corn, and figuratively employed to imply a small weight. The weight of a litre of hydrogen being called one crith; the volume-weight of other gases, referred to hydrogen as a standard, may be expressed in terms of this unit. For example, the relative volume-weight of chlorine being 35.5, that of oxygen 16, that of nitrogen 14, the actual weights of one litre of each of these elementary gases at the standard

temperature and pressure may be called respectively 35.5 criths, 16 criths, and 14 criths. The ninth lecture elucidates the philosophical conceptions of chemical phenomena, and marks the distinction between molecules and atoms. The tenth treats of the molecule-forming value, and the atom fixing power or *quantivalence* of the elementary bodies, and explains the natural system of classification which has sprung from the study of these powers. In the eleventh lecture the principles established for thirteen elementary bodies are shown to be applicable to the remaining forty-eight, and a tabular epitome of results is placed before the reader.

The concluding lecture touches upon the chemistry of bodies of complex structure, and shows us that these are generated by the operation of the same forces, exercised in accordance with the same laws, as determine the production of the binary compounds. It elucidates the important conception of substitution-compounds; that is to say, of bodies formed by the replacement of one or more of the constituent atoms of a compound by atoms of some other body,—a conception from which, as from a living seed, the mighty growth of modern chemistry has mainly sprung. The lecture closes with a retrospective survey of the course, intended to fix in our memory some of the leading facts and principles which have been brought under our notice.

Our imperfect sketch of this remarkable work conveys but a poor idea of its scope and character. All who wish to understand the chemical philosophy which is daily gaining ground should study it well. The most abstruse subjects are lucidly explained in its pages, and an attentive reader may pass from the first page to the last without halting at a single link of the beautiful chain of reasoning which Dr. Hofmann has put forth as an Introduction to Modern Chemistry. In addition to numerous diagrams, the book contains sixty-five admirable wood engravings, faithfully representing the novel apparatus employed by Dr. Hofmann for performing the experiments by which his lectures were illustrated.

Let us now turn to the "Course of Practical Chemistry," which Dr. Odling offers for the use of medical students, and which is admirably adapted for the guidance of students of pharmacy. The author is, perhaps, the most active of our chemical reformers; and nearly five years ago his lecture "On Acids and Salts" at the Royal Institution brought many disciples of Berzelius over to the new school. In the present work, however, he has adopted the atomic weights usually employed, instead of those which he believes to be correct. He has been compelled to take this course, to maintain the adaptability of his work to the wants of the medical student. While the *Pharmacopœia* gives  $\text{H}_2\text{O}$  as the formula of water, it is useless to insist upon the superiority of the formula  $\text{H}_2\text{O}$  in a treatise on practical chemistry. The old weights are, however, cleverly adapted to the doctrines of the new school, and in an appendix a series of tables are given, in which the new atomic weights are used. The introductory treatise on Chemical Reactions conveys much valuable information on equivalents, atoms, molecules, acids, salts, anhydrides, and the phenomena of chemical action. Synoptic formulæ which express only the composition of acids and salts, and not their internal molecular arrangement, are employed throughout the work; thus, sulphate of copper is written  $\text{CuSO}_4$ , instead of  $\text{CuO}, \text{SO}_3$ . In the section on Chemical Manipulation the author describes the most modern forms of apparatus employed in the laboratory; he explains the manner of using the blow pipe; he teaches the art of glass-blowing; and he minutely describes the operations of filtration, decantation, evaporation, distillation, drying, measuring, and determining specific gravities. The chapter on general Analytical Chemistry may be warmly recommended as a guide to students who wish to become practically acquainted with the chemical properties of such bodies as are of the most importance, and of the most common occurrence. Every reaction is fully expressed in symbolical formulæ. In the chapter on Toxicologic Chemistry the student is taught the best methods for detecting the principal poisons met with in medico-legal practice, such as the mineral acids, oxalic acid, corrosive sublimate, lead, copper, arsenic, antimony, prussic acid, strychnia, and morphia. The fourth chapter is on Animal Chemistry, and embraces sections on the composition of tissues, normal and abnormal urine, urinary deposits, the clinical examination of urine, urinary calculi, blood, and miscellaneous animal products. The work is by far the best laboratory guide for a student of medicine that has come under our notice. Th



who have read anything from the pen of Dr. Odling need not be informed that it is extremely well written. The book is furnished with an excellent index, and is illustrated with seventy woodcuts of microscopic preparations and chemical apparatus, all of them prepared expressly for the work from drawings of the actual objects.

The great "Dictionary," which is based on the system of notation adopted by the modern school of chemists, has given us articles from Palm-wax to Phosphorus, since we last noticed it in these columns. The most remarkable articles which fall into this portion of the alphabet, are those on Paraffin, Petroleum, Phenol and its derivatives, and Phenylamines. Under the last head comes Aniline, and all those gorgeous dyes which have lately been derived from it. These are fully described in the November part. B.

*Manual of Materia Medica and Therapeutics. Being an Abridgment of the late Dr. Pereira's Elements of Materia Medica arranged in conformity with the British Pharmacopœia, and adapted to the use of Medical Practitioners, Chemists and Druggists, Medicinal and Pharmaceutical Students, etc.* By FREDERIC JOHN FARRE, M.D. Cantab., F.L.S., etc. Assisted by ROBERT BENTLEY, M.R.C.S., F.L.S., etc., and by ROBERT WARINGTON, F.R.S., F.C.S., etc. (Longmans, Green, and Co.) 8vo. Pp. xxviii—614. Price 21s.

#### [FIRST NOTICE.]

THIS abridgment of "Pereira's Elements" has only just appeared, but even a superficial examination of its contents convinces us that it is a work that we may safely recommend to our readers. Leaving criticism for a future occasion, we will now reprint a portion of the preface in which Dr. Farre describes the aim and scope of the manual:—"The great work on Materia Medica, which I have undertaken to reduce to a more convenient size, and to adapt for more general use, is a mine of wealth which probably few readers have yet exhausted. The incessant labours of its late author, the extent to which he pushed his inquiries, and the pains which he took to verify all the information which he collected, give to his work a peculiar value and authority. Its copiousness, however, had become embarrassing; not, indeed, to those who desired to study the subject in the comprehensive spirit of the author, but to the majority of medical practitioners, pharmaceutical chemists, and medicinal and pharmaceutical students, who, having only a limited portion of time at their disposal, were obliged to be content with such an amount of information as they could reasonably hope to acquire, and such as would most assist them in their daily occupations. Bearing this in mind, I have reduced the large work to about one-third of its size, without I trust, diminishing—may I venture to hope with some increase of—its general utility. This, however, could not be done without strictly adhering to the following rules:—

"1. To omit all remedial agents, except those which the author termed pharmacological, such as mental, physical but unponderable, and hygienic remedies, or, to be more specific, the influence of the mind, of light, heat, electricity, food, exercise, climate, etc.

"2. To omit all pharmacological remedies which are not official, or contained in the British Pharmacopœia.

"3. To omit all classifications of medicines except the two classifications which the author himself adopted: one founded on the chemical classification of the inorganic bodies, and on the botanical and zoological classifications of plants and animals which yield the organic bodies; and the other founded on their physiological effects. These rules could not be carried out without excluding much valuable matter; but it appeared to me the wisest course to act like a judicious horticulturist, who, in reducing a tree to the necessary limits, removes the too luxuriant branches, rather than prune too closely those which bear the most valuable fruit. I have so somewhat abridged the botanical and zoological characters, and even in many cases the descriptions of the drugs themselves, important as the latter are, in order to avoid needless repetition. In doing this, I have sometimes made the author's descriptions appear more scanty and incomplete than he left them.

"My reason, however, is easily explained. The British Pharmacopœia contains, in addition to the names and definition

of articles in the Materia Medica, short descriptive characters and tests. These are frequently original, but have frequently also been taken from standard works on Materia Medica, and from none more largely than from the author's. When his remarks have thus been made to contribute to form the 'official character,' they have not been repeated in the subsequent 'description.' . . . Although my chief object has been to prepare a smaller work, by excluding the least important parts of the 'Elements,' much new matter has at the same time been introduced into the abridgment, in order that it may represent more correctly the present state of our knowledge. . . . It remains for me to acknowledge the valuable assistance received from Professor Bentley and Mr. Warington. The former has assisted me chiefly in the description of the organic bodies, and of the plants and animals which produce them; the latter chiefly in the organic bodies. The extensive knowledge of these gentlemen in their respective departments has greatly contributed to the accuracy of the work. I am also indebted to Dr. Black for revising the article on Chloroform, and to Mr. J. E. Howard for the information he has communicated respecting the Cinchona barks and their alkalies, and for the care and attention which he has paid to the sheets relating to these subjects."



#### THE TWO SOCIETIES.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

SIR,—The Pharmaceutical Society reminds me of the hen that has laid its first egg, and seems so astonished at the event that some excuse may be granted for its exuberant exultation.

Those who remember the United Society's birth were neither "superficial observers" nor far wrong when they said there was a desire to maintain the Pharmaceutical Society as a "clique" composed of the "élite of the trade only." If the founders of the United Society now admit that a change has taken place, and that the Pharmaceutical Society of 1865 is not the same in spirit and desires as in 1861, they take some credit to themselves for having been the means of effecting the alteration. In the *Pharmaceutical Journal* this month, an article is written on the Benevolent Fund, and we are informed that a new system of relief has been adopted by way of annuities, to necessitous members: a system which has been "a long deferred hope among the supporters of that fund—a hope dating back from the very day of incorporation." Two pensions of £30 are now appropriated, and will, we hope, carry comforts to the homes of the recipients.

It is a great pity that such a flow of milk could not have been given without kicking over the pail. Every reader would have rejoiced to find that the Society was at last able to carry out one of its most important objects, and that two of our brethren had been assisted. The Council might have enjoyed the gratification of this pleasant act, and the good it had been the means of doing, without turning round upon others who had stimulated them to advance by their agitation; for, had it not been for those referred to as "superficial observers," the present state of the Fund would not have been reached.

It is much to be regretted, that just at this time when members of both societies are striving to bury past grievances by conciliatory language, and in meeting together at social assemblies, striving to show that it is to the interest of both parties to work together in friendly concord, that the organ of one side should cast the greatest blessing it has had as a curse in the face of those from whom it came. At the present time, when passions are hardly quenched, and when it requires but little to revive the antagonistic spirit, such a course is, to say the least, injudicious, unless that portion of the Council who were opposed to the present system of relief are still actuated with the principles that governed their actions in 1861.

Can it be said that there was unanimity in the Council in bringing about the change in the system of relief, or can it not be shown that there was great opposition? Is not the change to be attributed to the liberal minority, and especially to the energy and fortitude of one member in particular, to whom all honour is due for his trouble and perseverance? If so, and I am inclined to believe it, it would have been more becoming to have modestly reported the fact, thereby obtaining the approbation of opponents, instead of lording it with pharisaical spirit, and flinging the gauntlet of defiance at non-society men.

The Annual Meeting of the United Society is about to take place. Delegates will attend from the provinces, willing, no doubt, to be forgetful of societies in their desire to benefit the trade; and although they, having a wish to forget the past, and to believe in the future, come to cement the contract desired by the London executive, yet if I mistake not this article will reproduce an impression that the policy of 1861 still exists, and that there is a desire to make the governing body, if not the whole Pharmaceutical Society, a clique as in days gone by. This will but raise a most determined opposition, and the society which caused it will very probably have cause to regret it.

I am, Sir,

Yours obediently,

JOHN WADE.

100, York-street, Westminster.



## WHAT MAY WE SELL?

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

SIR,—We chemists and druggists live in a state of glorious uncertainty now-a-days, as you justly remark in one of your articles. We are sometimes blamed for advising our customers, and sometimes for withholding advice. Again, we have recently learned that we may have to bear the ruinous expenses and worry of a Chancery suit for selling preparations in metal-capped bottles, supplied to us by respectable firms. Some of us are already in the unenviable position of defendants. Happily we may relieve ourselves of this dread of "proceedings at law" in future, by refusing to take any article whatever that has a metallic capsule.

Then with regard to "patent medicines," we scarcely know what articles (in the way of remedies) may not be brought under this head, and through our ignorance we may be nuzzled in heavy fines. There seems to be a doubt in the minds of many of the trade whether orange quinine wine, when put up for sale, requires a patent medicine stamp. I think you will be doing good service if you can set this matter at rest, by giving your opinion upon the question, as none of us, I dare say, wish to be ponneced upon. It appears to me that the proper way is first to warn us that we are doing that which is illegal, instead of punishing us for unwittingly transgressing the laws.

It appears that metallic capsules are not the only things likely to engage the attention of the Court of Chancery, and to perplex the retail trade. There is a trial going on between different makers of walnut pomade, walnut extract, etc. Advertisements appear threatening us with proceedings if we exhibit certain sorts for sale. How are we to know which is the right sort, and what are we to do with our present stocks? Certainly the actions should be laid against the makers of these articles, not against the innocent retailer.

Yours very respectfully,  
A YORK OUTSIDER.

## METALLIC CAPSULES.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

SIR,—The enclosed circular I received by post this morning, and my answer to it is, "I decline to purchase or receive any goods capped with Betts's capsules." That is also the resolution of another chemist in this town; and if the trade generally would adopt the same course, Mr. Betts would then have to find another market for his patent, and be justly punished for his wholesale and unjust interference with retail dealers in capsuled articles. I have destroyed all the capsules in my possession, or intend to do so; and for the future, when giving orders, shall intimate my decision to wholesale houses.

Yours respectfully,  
GEO. WATSON.

Sleaford, Oct. 18, 1865.

"BETTS AND CO.'S CAPSULES.—We beg to inform our customers that all capsules used by us in covering our bottles are manufactured by Messrs. Betts and Co., and bear their name and address, and that they need not feel any anxiety in selling our goods. —August 1, 1865."

## PATENT MEDICINE LICENCE.

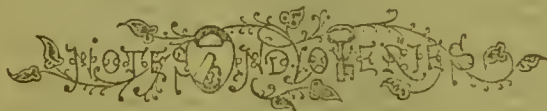
TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

SIR,—In your September number, I observed a letter from Mr. Martin, of Enfield, respecting the Patent Medicine Licence. It may be satisfactory to him, as well as to others interested therein, to be informed that I have no doubt but the Government will provide a remedy for the very anomalous way in which the law operates at present.

I am not at liberty to give my authority, but the result will prove the correctness of my statement.

I am, yours truly,  
J. TUFF, M.P.S.

Enfield.



## SIMPLE SYRUP.

Mr. Thomas Fardon, of Maidstone, writes:—

"Probably some of your readers have experienced, like myself, a difficulty in making simple syrup so as to prevent its 'candyng.' My opinion is decidedly against employing the article which is now finding its way into this country in such large quantities, and is manufactured in Belgium and France. It is next to impossible to get this sugar into solution without boiling, while the West Indian article gives no trouble whatever."

## AMYLENE.

"Chemist" (Liverpool).—This is a hydrocarbon containing  $C_{10}H_{10}$  (or  $C_8H_{10}$ , according to the new atomic weights). To prepare it a concentrated aqueous solution of chloride of zinc is heated to  $266^\circ$  Fahr., with an equal volume of amylie alcohol (rectified fusel oil); and the product is distilled from a water-bath over caustic potash, and repeatedly rectified. It is a transparent, colourless, very thin liquid, having a faint but offensive odour. It possesses anæsthetic properties, and has been used as a substitute for chloroform, but has been found to be very dangerous, having in some instances led to fatal results.

## LIQUOR BISMUTHI.

"Enquirer" (Devonport).—In our May number we printed a long article on this preparation, from the pen of Mr. N. Gray Bartlett, an American pharmacist. As an improvement on the formula proposed by Mr. Bartlett, Mr. Thomas P. Blunt, F.C.S. has published the following:—

Take of Subcarbonate of Bismuth, 2 oz.

Citric Acid,  $1\frac{1}{2}$  oz.

Nitric Acid, 2 oz.

Water;

Solution of Potash;

Spirit of Wine,—of each what is sufficient.

Dissolve the bismuth in the nitric acid, add sufficient water to take up the nitrate precipitated (from two or three ounces); carefully avoiding excess. Dissolve the citric acid in the solution thus formed (which will not be perfectly clear), and add, gradually, solution of potash (Liquor Potassæ) until the mixture is only faintly acid, and gives, after filtration, but a slight cloud on the addition of more potash. Filter, collect the precipitate, wash slightly (the presence of a trace of nitrate of ammonia in the product is of no consequence), and transfer the precipitate to a dish; add solution of ammonia gradually, until the precipitate is dissolved (a little oxide will remain); filter. Measure 4 fluid drachms of the solution, add excess of sulphide of ammonium, collect the precipitate on a counterpoised filter, wash, dry, and weigh; 261 grains of the precipitate thus obtained represent 237 of oxide of bismuth. Dilute the whole of the solution with water and spirit of wine, in such proportions that a mixture of 1 part of spirit with 7 of water shall contain the required number of grains (Mr. Blunt generally prefers 4) to the drachm of solution. In the above process, it is especially necessary to avoid the addition of an excess of potash, which appears to decompose the citrate formed, and precipitate an oxide insoluble in ammonia; and this appears, indeed, to take place to some extent previously to saturation; a slight waste is, therefore, incurred, by leaving the solution faintly acid, in order to avoid the formation of this insoluble precipitate.

"A Subscriber."—"Blaine's Outlines of Veterinary Art," price 18s., Longmans and Co. The seventh edition has lately appeared.

J. Me. C.—"First Four Books of Celsus," 8s., and "Pereira's Selecta à Præscriptis," 5s. Both published by Churchill.

W. W. (Sheffield).—The label certainly renders the article liable to stamp duty.



In Chemicals a good business was done up to the end of last month at a further advance in prices; but since then the demand has been less active; the previous advance, however, is fully supported. Tartaric Acid is quieter at 1s. 5½d. 1s. 6d. Oxalic Acid continues in good demand at 12d., and is scarce. Citric Acid is firm at 2s., and little to be had. Sal Acetos is steady at 14d. Chlorate of Potash is quiet at 14d. Bichromate is quiet again at 6d., less 2½ per cent. Prussiate of Potash is firm at the late advance,—12½d. 12½d. A good business has been done in Quinine, but again quiet at 5s. for French, and 5s. 3d. to 5s. 4d. for English. Iodine is firm at 6d. to 6½d. for the best quality. Extensive sales have been made in Sulphate of Copper, at the price is now 30s. 6d. to 32s. Soda Ash is more in demand at 2½d. to 2½d. Crystals are quiet at 120s. to 122s. 6d. ex ship. Bicarbonate is firm at 17s. 6d. to 18s. on the spot and 15s. to 15s. 6d. forward. Caustic Soda is firm at 2s. to 2½s. according to quality. Sal Ammoniac is steady at 35s. 6d. to 37s. 6d. Brimstone is firm at £7. Flour 12s. to 12s. 6d., and Roll 10s. 3d. to 10s. 6d. Bleaching Powder is quieter at 13s. to 13s. 6d. A good business has been done in Sulphate of Ammonia at 13s. to 13s. 6d. Cream Tartar quiet at 109s. to 102s. 6d. A fair business has been done



Alum at £7 to £7 5s. Refined Saltpetre is quiet at 28s. to 29s. Linseed Oil is dearer, and a good demand at 37s. to 37s. 6d. spot, and 38s. to 38s. 6d. first four months. Rape is also higher; Brown 51s. and Refined 53s. 6d. to 54s. Turpentine is better, but sales of French at 46s. 6d. to 47s. Petroleum is dearer, and in demand at 3s. 2d. A cargo to arrive has been sold at about 3s. 1d. for the Continent. Crude is worth £22 to £23. Ashes are without change. Rosin is a shade better.

In the Drug market business has been rather less extensive. A new arrival of China Rhubarb sold 1s. to 2s. lower prices. Cape Aloes sold at 38s. 6d. to 47s., being also 2s. cheaper. Barbadoes sold at £7 to £11 5s., which are former rates. Oil Cassia is slow at 7s. 8d. to 7s. 9d. Large sales made in Oil Aniseed at 7s. 8d. to 7s. 9d. spot, and for arrival. Castor Oil is about 1d. cheaper; sound and good pale 5d. to 5½d. Some fine pale Italian sold at 7d. to 7½d. Citronelle is steady at 4½d. to 4¾d. Cod Liver is quiet: late sales taken in at 5s. 6d. to 7s. Balsam Capivi is firm at 1s. 8d. to 1s. 8½d. China Camphor is lower, -92s. 6d., and Japan has sold at 95s. Gambier is firm at our quotations. Ipecacuanha is dearer; business last done at 8s. 10d. to 9s. Jalap is without change. Turkey Gums no change. Turkey Opium, parcel sold at 14s. 6d. to 14s. 9d. for fine. Shellac is 5s. to 7s. 6d. cheaper, but sells steadily at the decline. Cardamoms are rather lower. Good Aleppo sold at 5s. 3d. to 5s. 5d. Kowric Gum is dearer, and large sales. Logwood is rather dearer, so is Sapan and Red Sanders. Bark is without change. Turmeric is rather easier. Galls are less in demand, and late high prices are not attainable. Other goods are without change.

### PRICE CURRENT.

These quotations are the latest for ACTUAL SALES in Mincing Lane. It will be necessary for our retail subscribers to bear in mind that they cannot, as a rule, purchase at the prices quoted, inasmuch as these are the CASH PRICES IN BULK. They will, however, be able to form a tolerably correct idea of what they ought to pay.

	1865.	1865.	1864.	1864.
	s. d.	s. d.	s. d.	s. d.
EGOL, Cape, per cwt.....	75 0	91 6	82 6	100 0
French .....	58 0	83 0	60 0	85 0
Oporto, red .....	45 0	47 0	46 0	48 0
Sicily .....	72 6	75 0	72 6	75 0
Naples, white .....	68 0	70 0	65 0	73 0
Florence, white.....	0 0	0 0	85 0	90 0
red .....	0 0	0 0	80 0	85 0
Bologna, white .....	90 0	95 0	90 0	95 0
BROWROOT. (duty 4½ per cwt.)				
Bermuda. per lb.....	1 2	1 4	1 6	1 9
St. Vincent.....	0 2½	0 6½	0 4½	0 7½
Jamaica .....	0 3	0 5½	0 4	0 7½
Other West India .....	0 2	0 3	0 3½	0 4½
Brazil .....	0 2	0 3½	0 2½	0 3
East India .....	0 2	0 3½	0 3	0 5
Natal .....	0 4½	0 8½	0 4½	0 8
Sierra Leone .....	0 3½	0 4½	0 4½	0 5
SHES. per cwt.....				
Pot, Canada, 1st sort .....	29 6	0 0	31 0	31 6
Pearl, ditto, 1st sort .....	30 6	0 0	34 0	0 0
RIMSTONE,				
rough. per ton.....	140 0	145 0	140 0	145 0
roll .....	200 0	210 0	195 0	210 0
four .....	245 0	250 0	240 0	250 0
CHEMICALS,				
Acid—Acetic, per lb. ....	0 4	0 0	0 4½	0 5
Citric .....	2 0	0 0	1 7	1 7½
Nitric .....	0 5	0 5½	0 5	0 5½
Oxalic .....	1 0½	1 0½	0 9½	0 9½
Sulphuric .....	0 0½	0 1	0 0½	0 1
Tartaric crystal.....	1 5½	1 6	1 5	0 0
powdered .....	1 6½	0 0	1 5½	1 6
Alum .....	140 0	145 0	125 0	130 0
powder.....	160 0	0 0	140 0	145 0
Ammonia, Carbonate, per lb.	0 5½	0 6	0 5½	0 6½
Sulphate .....	260 0	270 0	265 0	285 0
Antimony, ore .....	160 0	180 0	160 0	180 0
crude .....	24 0	25 0	26 0	0 0
regulus .....	34 0	0 0	36 0	37 0
French star .....	34 0	0 0	36 0	37 0
Arsenic, lump .....	12 0	0 0	12 0	14 0
powder .....	6 0	0 0	6 3	6 6
Bleaching powder.....	13 6	14 0	11 0	0 0
Borax, East India refined..	0 0	0 0	0 0	0 0
British .....	54 0	0 0	56 0	0 0
Calomel .....	2 8	0 0	2 9	0 0
Camphor, refined .....	1 4½	0 0	1 3	1 4
Copperas, green .....	52 6	55 0	55 0	60 0
Corrosive Sublimato, per lb.	2 2	0 0	2 3	0 0
Green Emerald .....	0 0	0 0	0 0	0 0
Brunswick. per cwt.....	0 0	0 0	0 0	0 0

	1865.	1865.	1864.	1864.
	s. d.	s. d.	s. d.	s. d.
CHEMICALS.				
Iodine, dry .....	0 6	0 6½	0 5	0 5½
Magnesia, Carbon .....	42 6	47 6	42 6	45 0
Calcined .....	1 2	1 8	1 2	1 8
Minium, red .....	21 6	24 6	21 6	24 6
orange .....	32 6	33 0	32 6	33 0
Potash, Bichromate per lb.	0 6	0 0	0 6½	0 0
Chlorate .....	1 2	0 0	1 0	0 0
Hydriodate. per oz.	0 6½	0 0	0 5½	0 0
Prussiate. per lb.	1 0½	1 0½	0 11½	0 0
red .....	2 0	0 0	1 9½	1 11
Precipitate, red .....	2 9	0 0	2 10	0 0
white .....	2 0	0 0	2 10	0 0
Prussian Blue .....	1 0	1 10	1 0	1 10
Rose Pink .....	20 0	0 0	29 0	0 0
Sal-Acetos .....	1 1½	1 2	0 11½	1 0
Sal-Ammoniac .....				
British .....	35 6	33 0	35 6	37 6
Salts, Epsom .....	8 6	9 0	8 0	8 6
Glauber .....	4 6	5 6	5 0	5 6
Soda, Ash. .... per deg.	0 2½	0 2½	0 2	0 0
Bicarbonate. per cwt.	17 6	18 0	11 6	11 9
Crystals .....	120 0	0 0	0 0	90 0
Sugar Lead, white per cwt.	36 6	37 0	37 0	38 0
brown .....	26 6	27 6	27 6	28 6
Sulphate Quinine. per oz.				
British, in bottle ..	5 3	5 4	0 0	6 3
Foreign .....	5 0	0 0	5 7	5 8
Sulphate Zinc. .... per cwt.	14 6	15 0	14 0	15 0
Verdigris. .... per lb.	0 10	1 2	0 11	1 0
Vermilion, English .....	2 11	3 3	3 0	3 4
China .....	2 10	3 0	2 9	3 0
Vitriol, blue or Rom. per ct.	30 0	31 0	29 0	30 0
COCHINEAL, per lb.				
Honduras, black .....	3 4	5 0	3 0	4 4
silver .....	2 6	3 6	2 6	3 4
Mexican, black .....	3 4	3 7	3 0	3 3
silver .....	3 2	3 5	2 9	2 10
Lima .....	3 0	3 2	0 0	0 0
Teneriffe, black .....	3 5	4 0	2 10	3 10
silver .....	3 4	3 6	2 9	2 10
DRUGS,				
Aloes, Hepatic .... per cwt.	100 0	170 0	100 0	170 0
Scottrine .....	140 0	290 0	170 0	300 0
Cape, good .....	46 0	50 0	46 0	48 0
inferior .....	30 0	45 0	30 0	42 0
Barbadoes .....	70 0	280 0	50 0	320 0
Ambergris, grey .... per oz.	22 0	25 0	19 0	22 0
Angelica Root .... per cwt.	20 0	35 0	20 0	35 0
Aniseed, China star .....	160 0	210 0	105 0	110 0
German, &c. ....	24 6	40 0	24 0	39 0
Balsam, Canada .... per lb.	0 10	0 11	0 10	0 11
Capivi .....	1 7½	1 8½	1 7	1 9
Peru .....	4 9	4 10	4 8	0 0
Tolu .....	2 11	3 0	3 6	3 7
Bark, Cascarella. .... per cwt.	23 0	34 0	25 0	36 0
Peru, crown & grey per lb.	0 9	2 0	0 9	2 3
Calisaya, flat .....	2 2	2 9	3 0	3 6
quill .....	2 0	2 6	2 9	3 3
Carthagea .....	0 10	1 9	1 1	1 10
Pitayo .....	0 10	2 2	1 5	2 3
Red .....	1 9	10 0	2 6	9 0
Bay Berries. .... per cwt.	0 0	0 0	0 0	0 0
Bucca Leaves. .... per lb.	0 3	0 8	0 3	0 11
Camomile Flowers .....	20 0	110 0	25 0	105 0
Camphor, China .....	90 0	95 0	82 6	84 0
Canella alba .....	23 0	33 0	23 0	33 0
Cantharides .....	2 4	2 5	2 6	2 7
Cardamoms, Malabar, good	6 0	6 4	5 6	6 0
inferior .....	4 6	5 10	4 6	5 6
Madras .....	2 9	5 5	2 3	4 0
Ceylon .....	3 3	4 0	5 0	5 5
Cassia Fistula. .... per cwt.	16 0	32 0	16 0	28 0
Castor Oil, 1st pale. .... per lb.	0 6½	0 7½	0 6	0 6½
2nd .....	0 5½	0 6	0 4½	0 6
inferior and dark .....	0 4½	0 5	0 4½	0 4½
Bombay, in casks .....	0 4½	0 4½	0 4½	0 4½
Castorum .....	1 0	20 0	1 0	20 0
China Root .....	27 0	23 0	16 0	23 0
Cocculus Indicus .....	25 0	20 0	22 0	24 0
Cod Liver Oil .....	3 6	6 6	6 0	16 6
Colocynth, apple .... per lb.	0 7	1 0	0 7	1 1
Colombo Root .... per cwt.	240 0	400 0	100 0	1 0 0
Cream Tartar .....				
French .....	100 0	102 6	95 0	100 0
Venetian .....	102 6	0 0	102 6	0 0
gray .....	90 0	95 0	90 0	95 0
brown .....	90 0	92 6	85 0	92 6
Croton Seed .....	500 0	530 0	90 0	95 0
Cubels .....	80 0	85 0	90 0	92 6
Cumin Seed .....	19 0	23 0	22 0	20 0
Dragon's blood root .....	200 0	340 0	200 0	300 0
lump .....	85 0	280 0	90 0	260 0
Galangal Root .....	13 0	15 0	16 0	18 0
Gentian Root .....	21 0	22 0	23 0	0 0
Gulnea Grains .... per cwt.	56 0	61 0	58 0	60 0
Honey, Narbonne .....	40 0	80 0	40 0	80 0
China .....	25 0	33 0	23 0	35 0
Jamaica .....	28 0	61 0	23 0	60 0
Ipecacuanha .....	8 6	9 0	7 0	7 2
Isinglass, Brazil .....	2 0	5 2	1 4	4 4
East India .....	1 0	4 4	0 10	4 4
West India .....	3 4	3 7	3 0	3 7
Russian .....	9 6	10 9	9 6	11 0
Jalap .....	1 0	5 3	0 9	5 3



## DRUGS—continued.

	1865.	1865.	1864.	1864.
	s. d.	s. d.	s. d.	s. d.
Juniper Berries . . . per cwt.	7 6	9 0	7 0	0 0
German and French . .	9 6	10 6	9 0	10 0
Italian . . . . .	0 0½	0 0½	0 0½	0 0½
Lemon Juice . . . per doz.	0 0½	0 0½	0 0½	0 0½
Liquorice . . . . . per cwt.	75 0	80 0	75 0	80 0
Spanish . . . . .	55 0	75 0	55 0	70 0
Italian . . . . .	2 0	2 0	2 6	2 0
Manna, flaky . . . . .	1 2	1 4	1 2	1 4
small . . . . .	17 0	34 6	18 0	27 0
Musk . . . . . per oz.	14 6	16 6	10 0	13 0
Nux Vomica . . . . .	13 0	14 6	14 0	16 6
Opium, Turkey . . . . .	0 0	0 0	0 0	0 0
Egyptian . . . . .	20 0	31 0	30 0	31 0
Orris Root . . . . . per cwt.	3 0	0 0	2 6	2 0
Pink Root . . . . . per lb.	100 0	0 0	80 0	0 0
Quassia (bitter wood) per ton	0 5	1 2	0 9	1 6
Rhatany Root . . . . . per lb.	2 6	10 6	2 9	6 0
Rhubarb, China, round . .	3 0	9 6	2 6	6 3
flat . . . . .	14 0	15 0	9 0	10 0
Dutch, trimmed . . .	16 0	17 0	15 0	16 0
Russian . . . . .	30 0	32 0	28 0	34 0
Saffron, Spanish . . . . .	140 0	160 0	130 0	0 0
Salap . . . . . per cwt.	1 0	1 4	1 0	1 5
Sarsaparilla, Lima . . . .	0 11	1 1	0 11	1 2
Para . . . . .	0 9	1 7	0 11	1 6
Honduras . . . . .	1 1	2 3	1 6	2 3
Jamaica . . . . .	10 0	12 0	14 0	15 0
Sassafras . . . . . per cwt.	30 0	44 0	30 0	34 0
Scammony, virgin . . . .	14 0	23 0	12 0	23 0
second . . . . .	3 3	3 6	3 3	3 6
Senska Root . . . . .	0 0	0 0	0 0	0 0
Senna, Calcutta . . . . .	0 4	0 5½	0 3½	0 6
Bombay . . . . .	0 4	1 3	0 4½	1 6
Tinnevely . . . . .	0 3	0 9	0 3½	0 8
Alexandria . . . . .	3 6	0 0	4 6	4 9
Snake Root . . . . .	0 11	0 0	0 11	0 0
Spermaceti, refined . . . .	0 1½	0 8½	0 0½	0 2½
Squills . . . . .	15 0	17 0	15 0	17 0
Tamarinds, E. India, per cwt.	10 0	20 0	12 0	23 0
West India . . . . .	20 6	28 0	23 6	30 0
Terra Japonica—	22 6	26 0	22 0	22 6
Cambier . . . . . per cwt.	20 0	29 0	20 0	30 0
Cutch . . . . .	20 0	35 0	26 0	38 0
Valerian Root, English . .	10 0	0 0	11 0	12 0
Vanilla, Mexican . . . . .	105 0	170 0	95 0	120 0
Wormseed . . . . . per cwt.	35 0	85 0	30 0	85 0
GUM—Ammoniac, drop, per cwt.	200 0	230 0	200 0	210 0
lump . . . . .	100 0	220 0	190 0	210 0
Animi, fine pale . . . . .	160 0	180 0	160 0	180 0
bold amber . . . . .	100 0	150 0	100 0	155 0
medium . . . . .	40 0	95 0	40 0	95 0
small and dark . . . .	76 0	35 0	90 0	95 6
Arabic, E. I., fine pale picked	62 0	75 0	64 0	76 0
unsorted, good to fine	46 0	60 0	50 0	60 0
red and mixed . . . .	25 0	40 0	25 0	40 0
siftings . . . . .	130 0	200 0	120 0	160 0
Turkey, picked, good to fine	65 0	120 0	65 0	110 0
second and inferior . .	32 0	50 0	32 0	50 0
in sorts . . . . .	40 0	50 0	38 0	42 0
Gedda . . . . .	58 0	75 0	68 0	72 0
Barbary, white . . . . .	45 0	53 0	38 0	40 0
brown . . . . .	35 0	40 0	37 0	45 0
Australian . . . . .	20 0	55 0	30 0	75 0
Asafoetida, fair to good . .	340 0	900 0	350 0	850 0
Benjamin, 1st quality . . .	240 0	300 0	280 0	300 0
2nd . . . . .	50 0	240 0	50 0	240 0
3rd . . . . .	70 0	82 6	72 0	80 0
Copal, Angola, red . . . .	70 0	80 0	75 0	85 0
pale . . . . .	60 0	95 0	60 0	90 0
Benguella . . . . .	0 4	1 0	0 4	1 0
Sierra Leone . . . .	23 0	36 0	25 0	55 0
Manilla . . . . .	45 0	52 6	34 0	47 6
Dammar, pale . . . . .	160 0	170 0	160 0	170 0
Gilbanum . . . . .	250 0	300 0	250 0	300 0
Gamboge, picked, pipe . . .	140 0	240 0	140 0	240 0
in sorts . . . . .	0 0	1 5	1 0	2 0
Guaianum . . . . . per lb.	340 0	460 0	320 0	440 0
Kino . . . . . per cwt.	30 0	70 0	23 0	40 0
Kowrie . . . . .	3 6	0 0	5 0	6 0
Mastic, picked . . . . . per lb.	130 0	160 0	130 0	180 0
Myrrh, gd. and fine, per cwt.	70 0	110 0	70 0	130 0
sorts . . . . .	68 6	78 0	70 0	75 0
Olibanum, pale drop . . . .	65 0	67 0	58 0	68 0
amber and yellow . . .	20 0	48 0	17 0	44 0
mixed and dark . . . .	70 0	80 0	90 0	105 0
Senegal . . . . .	72 6	95 0	75 0	95 0
Sandrac . . . . .	180 0	260 0	180 0	260 0
Tragacanth, leaf . . . . .	100 0	130 0	100 0	130 0
in sorts . . . . .	£ s. d.	£ s. d.	£ s. d.	£ s. d.
OILS . . . . . per tun	48 0	40 0	40 0	48 0
Sea . . . . .	113 0	0 0	64 0	66 0
Sperm, body . . . . .	50 0	51 0	51 10	52 0
Coal . . . . .	0 0	0 0	0 0	0 0
Whale, Greenland . . . . .	46 0	48 0	42 0	45 0
South Sea, pale . . . .	85 0	36 0	35 0	0 0
East India Fish . . . .	55 0	56 0	59 0	60 0
Olive, Gallipoli . . . . . per tun	s. d.	s. d.	s. d.	s. d.
Florence, half-cheat . .	20 0	0 0	20 0	21 0
Cocoaanut, Cochla . . .	50 6	51 6	33 0	39 0
Ceylon . . . . .	47 6	43 0	36 6	38 0
Sydney . . . . .	42 0	43 0	32 0	30 0
Ground Nut and Gu.	44 0	0 0	38 0	0 0
Bombay . . . . .				

## OILS—continued.

	1865.	1865.	1864.	1864.
	s. d.	s. d.	s. d.	s. d.
Madras . . . . . per cwt.	47 6	48 6	36 0	0 0
Palm, fine . . . . .	42 0	44 6	35 0	0 0
Linseed . . . . .	36 6	36 9	33 0	33 6
Rapeseed, English, pale . .	52 0	0 0	44 0	0 0
brown . . . . .	51 0	0 0	41 6	0 0
Foreign pale . . . .	53 6	0 0	41 6	0 0
brown . . . . .	51 0	0 0	42 0	42 6
Lard . . . . .	77 0	0 0	46 0	47 0
Tallow . . . . .	40 0	0 0	41 0	41 6
Rock Crude . . . . . per ton	£22 0	£23 0	£16 0	£16 10
Oils, Essential—				
Almond, essential . . . .	0 0	0 0	0 0	0 0
expressed . . . . .	0 10½	0 0	1 0½	0 0
Aniseed . . . . .	7 8	7 9	6 2	6 3
Bay . . . . . per cwt.	0 0	0 0	110 0	120 0
Bergamot . . . . . per lb.	10 0	15 0	7 0	10 0
Cajaputa, (in bond) . . . .	0 2	0 2½	0 2½	0 2½
Caraway . . . . . per lb.	5 0	6 6	5 0	6 1
Cassia . . . . .	7 9	0 0	8 0	8 1
Cinnamon (in bond) . . . .	1 2	3 3	0 9	3 0
Cinnamon Leaf . . . . .	0 5	0 8	0 2	0 4½
Citronel . . . . .	0 4½	0 5	0 5½	0 6½
Clove . . . . .	0 0	1 8	0 9	1 0
Croton . . . . .	1 0	2 6	1 10	3 0
Juniper . . . . . per lb.	2 0	2 10	2 6	4 6
Lavender . . . . .	1 9	2 10	5 6	7 0
Lemon . . . . .	6 3	9 0	10 10½	0 11
Lemongrass . . . . . per oz.	1 3	0 2½	0 2	0 3½
Mace, ex. . . . .	0 1	5 2	5 0	7 0
Neroli . . . . .	5 0	0 3½	0 1	0 2½
Nutmeg . . . . .	0 1½	6 0	5 6	6 9
Orange . . . . . per lb.	5 0	22 0	16 0	24 0
Otto of Roses . . . . . per oz.	18 0	0 0	12 6	14 0
Peppermint, per lb.				
American . . . . .	14 0	14 6	34 6	36 0
English . . . . .	0 0	0 0	0 0	0 0
Rhodium . . . . . per oz.	0 0	0 0	0 0	0 0
Rosemary . . . . . per lb.	2 0	2 2	2 9	3 6
Sassafras . . . . .	3 3	8 0	5 9	8 0
Spearmint . . . . .	5 0	8 0	0 0	0 0
Spike . . . . .	0 0	2 0	1 9	2 3
Thyme . . . . .	1 9	0 0	12 0	0 0
PITCH, British . . . . . per cwt.	12 0	0 0	0 0	0 0
Swedish . . . . .	0 0	0 0	0 0	0 0
SALTPETRE, per cwt.				
English, 6 per cent. or under	24 0	25 0	30 0	31 0
over 6 per cent. . . .	23 6	24 0	28 6	29 6
Madras . . . . .	21 0	22 6	27 6	28 6
Bombay . . . . .	20 0	22 0	27 0	28 0
British-refined . . . .	28 0	29 0	34 0	34 6
Nitrate of soda . . . .	13 0	14 0	15 6	16 6
SEED, Canary . . . . . per qr.	48 0	54 0	0 0	0 0
Caraway, English . . . . .	0 0	0 0	0 0	0 0
German, &c. . . . .	0 0	0 0	0 0	0 0
East India . . . . .	0 0	0 0	0 0	0 0
Coriander . . . . .	0 0	0 0	0 0	0 0
Hemp . . . . .	48 0	52 0	58 0	0 0
Linseed, Black Sea . . . .	56 0	62 0	59 0	69 6
Calcutta . . . . .	62 0	64 0	62 0	60 0
Bombay . . . . .	64 0	65 0	67 0	60 0
Egyptian . . . . .	52 0	53 0	57 0	60 0
Mustard, brown . . . . . per bush.	0 0	0 0	0 0	0 0
white . . . . .	0 0	0 0	0 0	0 0
Poppy, East India . . . . . per qr.	56 0	57 6	51 6	52 1
Rape, English . . . . .	0 0	0 0	0 0	0 0
Danube . . . . .	68 0	69 0	62 0	63
Calcutta fine . . . . .	64 0	0 0	52 0	52
Bombay . . . . .	73 0	74 0	62 0	63
Teel, Sesmy or Gungy . . . .	66 0	69 0	56 6	60
Cotton . . . . . per ton	145 0	155 0	180 0	140 0
Ground Nut Kernels per ton	320 0	0 0	280 0	0 0
SOAP, London yel. . . . . per cwt.	28 0	32 0	20 0	34
mottled . . . . .	32 0	38 0	24 0	36
enrd . . . . .	46 0	50 0	46 0	50
Castile . . . . .	40 0	42 0	40 0	41
Marselles . . . . .	40 0	42 0	40 0	42
Soy, China . . . . . per gal.	3 6	3 9	3 3	3
Japan . . . . .	0 0	0 0	1 5	0
Sponge, Turkey, fine picked	14 0	18 0	19 0	23
fair to good . . . . .	6 0	12 0	7 0	17
ordinary . . . . .	1 6	4 0	2 6	6
Bahama . . . . .	0 8	2 6	0 4	1
TURPENTINE, Rough, per c.	0 0	0 0	0 0	0 0
Spirits, French . . . .	46 6	47 0	62 6	63
American, in casks . . .	0 0	0 0	0 0	0 0
WAX, Bees, English . . . .	180 0	185 0	170 0	175
German . . . . .	190 0	200 0	182 6	185
American . . . . .	185 0	0 0	175 0	0
white fine . . . . .	0 0	0 0	0 0	0
Jamaica . . . . .	180 0	185 0	180 0	195
Gambia . . . . .	190 0	195 0	170 0	195
Mogadore . . . . .	130 0	170 0	130 0	167
East India . . . . .	150 0	190 0	150 0	180
ditto, bleached . . . .	200 0	220 0	200 0	230
vegetable, Japan . . . .	56 0	68 6	56 0	60
WOOD, Dry, per ton				
Fustic, Cuba . . . . .	160 0	180 0	170 0	18
Jamaica . . . . .	105 4	110 0	140 0	14
Savanna . . . . .	120 0	0 0	0 0	0
Zante . . . . .	0 0	0 0	0 0	0
Logwood, Campeachy . . . .	180 0	190 0	180 0	21
Honduras . . . . .	105 0	0 0	100 0	10
St. Domingo . . . . .	85 0	90 0	80 0	0
Jamaica . . . . .	85 0	87 6	75 0	0







